CURRICULUM ASSESSMENT PROCEDURES YEAR WISE

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Director
Accurate Institute of Management & Technology
Greater Noida

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REGISTRATION FORM

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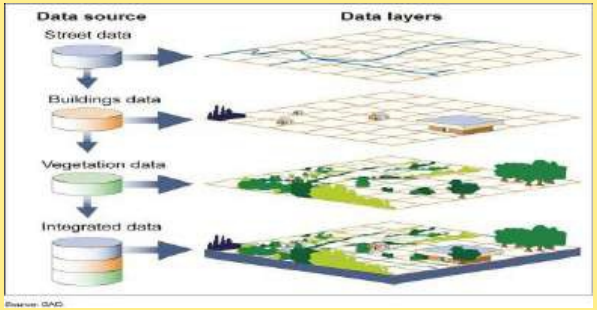

PATRON

Ms. Poonam Sharma

DIRECTOR

Dr. Sunil Mishra

COURSE COORDINATOR

Mr. Sunil Yadav

RESOURCE PERSON

Mr. Sandeep

INTERNAL COMMITTEE MEMBERS

Seema Yadav
Navneet Pandey
Prabhat Tiwari
AM Tripathi
Dr. S.L. Rajpoot
Suresh Tiwari
Rajesh Pal

ACCURATE

ACCURATE INSTITUTE OF MANAGEMENT & TECHNOLOGY

VALUE ADDED COURSE

ON

JAVA & ANDROID APPLICATION DEVELOPMENT

Date : July-Sept. 2022

Organized By:
Department of Computer Science
Accurate Institute of Management & Technology, Greater Noida

website : www.accurate.in
Email: hodcse@accurate.in

ABOUT ORGANISING INSTITUTE

Accurate Institute of Management & Technology is a premier Institute of Engineering, established in the year 2006 under the patronage of the Accurate Education Society. The Institute is approved by AICTE and affiliated to AKTU. AIMT is situated in the vicinity of Greater Noida Institute is a fast growing Engineering College in Greater Noida and strives to provide state-of-art infrastructure. Multi-speciality faculty continuously reviews, innovate and experiment with update teaching methodologies and learning resources and focuses on research training and consultancy through integrated institute industry symbiosis. All faculties and Students are actively involved in research, development, testing, consultancy and publication of research papers and books. The department CSE is recognized as an active research centre by different national research organization.

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OBJECTIVE:

Hadoop is an open-source software framework used for storing and processing Big Data in a distributed manner on large clusters of commodity hardware. Hadoop was developed, based on the paper written by Google on MapReduce system and it applies concepts of functional programming.

SCOPE:

Artificial intelligence (AI), deep learning, and neural networks represent incredibly exciting and powerful machine learning-based techniques used to solve many real-world problems.

TOPICS COVERED:

1.Introduction: what is ML; Problems, data and tools; Visualization;
- Linear regression, SSE, gradient descent closed form; normal equations;
- Over fitting and complexity; training, validation test data

2.Classification problems; decision boundaries nearest neighbor methods
- Probability and classification, Bayes optimal decisions
- Naive Bayes and Gaussian class- conditional distribution

3.Logistic regression, online gradient descent Neural Networks
- Decision tree and Review for Mid-term
- Ensemble methods: Bagging, random forests boosting , A more detailed discussion on Decision Tree and Boosting

4.Unsupervised learning:
- clustering, k-means, hierarchical agglomeration , Advanced discussion on clustering and EM

5.Introduction of Perceptron

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Last date for submission of application:
20th December 2018

VENUE:

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ACCURATE INSTITUTE OF MANAGEMENT & TECHNOLOGY

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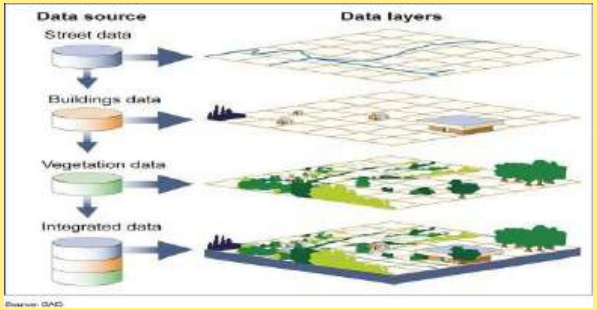

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VALUE ADDED COURSE

ON

IOT (INTERNET OF THINGS)

Date : Aug.-Oct. 2022

Organized By:
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Accurate Institute of Management & Technology, Greater Noida

website : www.accurate.in
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OBJECTIVE:

The goal behind the Internet of things is to have devices that self report in real-time, improving efficiency and bringing important information to the surface more quickly than a system depending on human intervention.

SCOPE:

As the saying goes, "Change is the only constant". Futuristic technologies such as the Internet of Things (IoT) are no exception and are all set to transform our lives and bring a paradigm shift in how businesses should conduct traditionally. This shift complements the exponential increase in computing power and the availability of a humongous amount of data, that machines are fast learning to replace humans in several areas.

TOPICS COVERED:

Introduction to IOT

- IoT network design and Cloud networks.
- Networking technologies for data centres.
- Software defined networking.
- Network virtualization technologies.
- Embedded system architecture.
- Adaptive and cognitive networks.
- Wireless networks for IoT and Cloud.

- **Hardware and software systems:** Construction of hardware and software systems that will make the IoT enabled systems intelligent and secure.
- **Analytics:** Integration and analysis of the enormous streams of physical world instrumentation with all of the existing data.
- **Security:** Developing pervasive sensing and analytic systems to preserve and protect user security.

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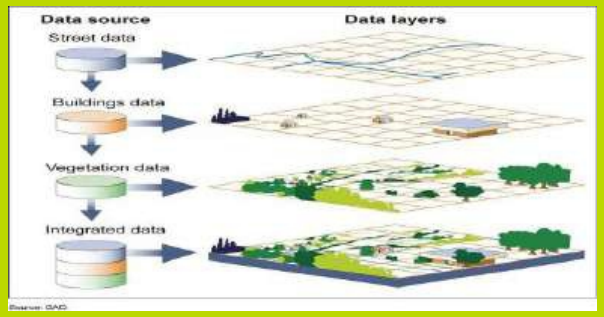

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ACCURATE INSTITUTE OF MANAGEMENT & TECHNOLOGY

VALUE ADDED COURSE ON ROBOTICS

Date : Aug.-Oct. 2022

Organized By:
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OBJECTIVE:

Robotics is a branch of engineering and computer science that involves the conception, design, manufacture and operation of robots. The objective of the robotics field is to create intelligent machines that can assist humans in a variety of ways. Robotics can take on a number of forms.

SCOPE:

The Robotics is inter-disciplinary engineering with ample opportunities to get placed in some of the best organizations in both India and abroad. From manufacturing units to experimental robotics for medical, military and automotive industries, the future of robotics engineering finds tremendous opportunities for its budding professionals.

TOPICS COVERED:

Home electronics.
Vacuum cleaners and lawnmowers can be programmed to automatically perform tasks without human intervention.

Home monitoring. This includes specific types of robots that can monitor home energy usage or provide home security monitoring services, such as Amazon Astro.

Artificial intelligence (AI). Robotics is widely used in AI and machine learning (ML) processes, specifically for object recognition, natural language processing, predictive maintenance a nd process automation.

Data science.
The field of data science relies on robotics to perform tasks including data cleaning, data automation, data analytics and anomaly detection. Law enforcement and military. Both law enforcement and the military rely heavily on robotics, as it can be used for surveillance and reconnaissance missions. Robotics is also used to improve soldier mobility on the battlefield.

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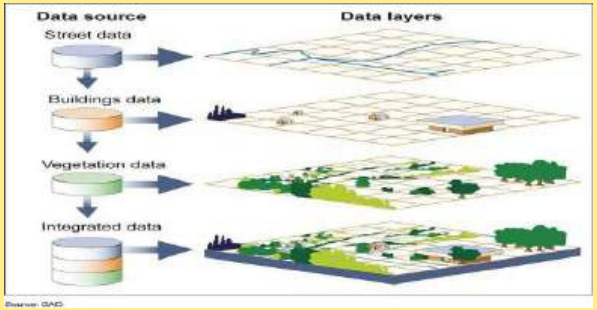

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VALUE ADDED COURSE

ON

RUBY

Date : July - Sept. 2022

Organized By:
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OBJECTIVE:

Object is the default root of all Ruby objects. Object inherits from Basic Object which allows creating alternate object hierarchies. Methods on Object are available to all classes unless explicitly overridden. Object mixes in the Kernel module, making the built-in kernel functions globally accessible.

SCOPE:

In Ruby, variable scope determines where in your code a variable can be accessed and modified. Understanding variable scope is crucial for writing maintainable and bug-free Ruby programs. Ruby has three main types of variable scope: local, instance, and global variables, each with its own rules and usage.

TOPICS COVERED:

- Ruby For Beginners
- Ruby Programming Language (Introduction)
- Comparison of Java with other programming languages
- Similarities and Differences between Ruby and C language
- Similarities and Differences between Ruby and C++
- Environment Setup in Ruby
- How to install Ruby on Linux?
- How to install Ruby on Windows?
- Interesting facts about Ruby Programming Language
- Object Oriented Programming in Ruby
- Ruby | Class & Object
- Private Classes in Ruby
- Freezing Objects | Ruby
- Ruby | Inheritance
- Polymorphism in Ruby
- Ruby | Constructors
- Ruby | Access Control
- Ruby | Encapsulation

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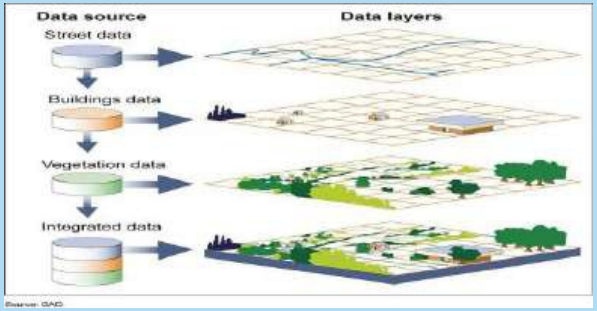

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VALUE ADDED COURSE

ON

XFIG

Date : July-Sept. 2022

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OBJECTIVE:

xfig is a drawing package that's ideal for producing diagrams that can be imported into LATEX and many other word processing packages. On CUED's Teaching System you'll find it in the Graphics section of the Applications menu. Or you can start it by typing its name.

SCOPE:

In Xfig, figures may be drawn using objects such as circles, boxes, lines, spline curves, text, etc. It is also possible to import images in a number of formats, including JPEG, EPS, PostScript, and SVG. Those objects can be created, deleted, moved or modified.

TOPICS COVERED:

- Xfig Version 3.2.5 User Manual
- Xfig homepage at Archive-It
- Native Fig file format
- WinFIG, an Xfig clone for Windows (shareware with demo version)
- Applications producing Fig format output files at the Wayback Machine construction lines from the centre of the polygon to the vertices, one can subdivide a circle into segments. This is useful when drawing something like a Compass Rose, for example.

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& TECHNOLOGY

- Make users aware of the importance of circuit simulations.
- To recognise students and faculty who are good in this area.

Participate & earn attractive honorarium + certificate of internship from IIT Bombay.

Lab Migration

We help Colleges & Institutes shift their EDA labs based on proprietary tools to eSim.

The Lab Migration team helps in the following ways:

- Provide suggestions on the different ways eSim can be implemented in the lab.
- Coordinate lab migration.
- Provide solutions to the lab's problem statements.
- Provide support to the faculty and lab in charge.

Participate and earn attractive honorarium for your efforts.

Spoken Tutorials

The eSim team has created Spoken Tutorials on eSim. For self-learning, we recommend you to use the Spoken Tutorials available on our web site.

Forum

Forum is a place where one can post all their doubts and questions which users / developers get while using eSim. Please reach out to us with your queries on installation and use of eSim through our Forum page.

About FOSSEE

FOSSEE (Free and Open Source Software for Education) project is funded by the National Mission on Education through ICT, MHRD. The FOSSEE team works on 'Adaptation & development of Open Source simulation packages equivalent to proprietary software', and is based at Indian Institute of Technology Bombay.

Other Projects under FOSSEE

Scilab, Python, DWSIM, Osdag, R, OpenFOAM, Xcos, QGIS, OpenModelica, Focal and Open hardware, etc.

Activities of FOSSEE

- Textbook Companion
- Lab Migration
- Niche Software Activities
- Forum
- Workshops and Conferences

Weblinks

eSim:

https://esim.fossee.in

Circuit Simulation Project:

https://esim.fossee.in/circuit-simulation-project

Lab Migration:

https://esim.fossee.in/lab-migration-project

Forum:

https://esim.fossee.in/forum

Spoken Tutorials:

https://esim.fossee.in/downloads/tutorials

Github repository:

https://github.com/FOSSEE/eSim

https://github.com/FOSSEE/ngHub

Contact us:

General help & Queries:
Email: contact-esim@fossee.in

Sponsored by:

National Mission on Education through ICT, MHRD
http://sakshat.ac.in

eSim

A Free and Open Source EDA Tool

https://esim.fossee.in

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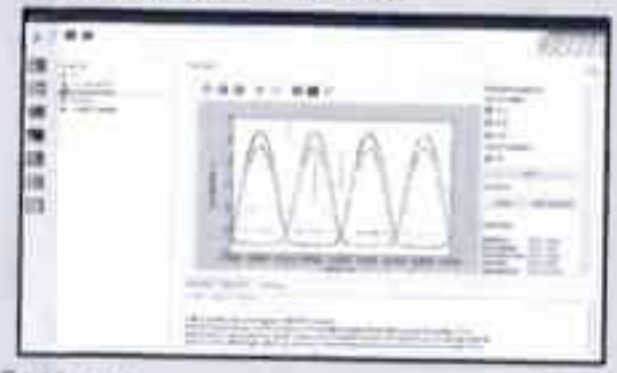
fossee better education
https://fossee.in

Director
Accurate Institute of Management & Technology
Greater Noida

Introduction to eSim

eSim (previously known as Oscad / FreeEDA) is a free/libre and open source EDA tool developed by the FOSSEE team at IIT Bombay. It can be used for circuit design, simulation, and PCB design. It also supports mixed-mode simulation.

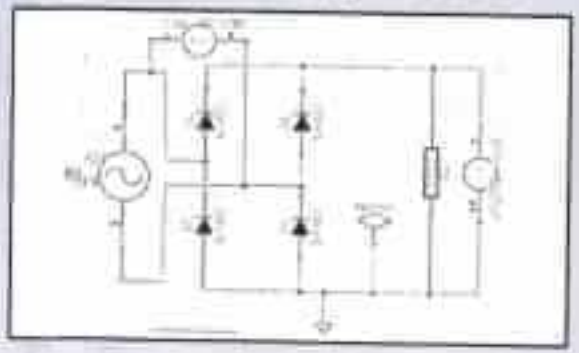
It is an integrated tool built using free/libre and open source software such as KiCad (http://www.kicad-pcb.org), Ngspice (http://ngspice.sourceforge.net/) and GHDL (http://ghdl.free.fr/). eSim is released under GNU GPL License and runs on Ubuntu Linux OS, Windows 7 and above versions of Windows OS.



Features

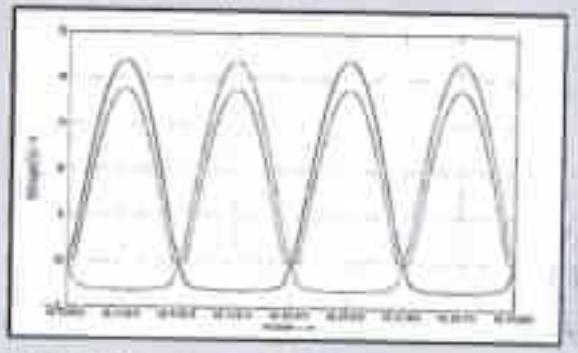
Create Circuit Schematic

- Generate netlists for simulation and PCB design.
- Perform Electric Rules Check (ERC).
- Create new components using Library Editor.



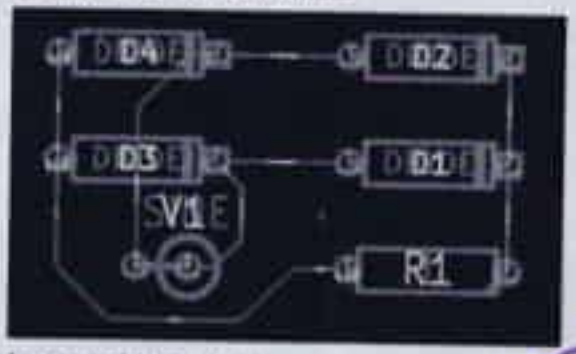
Perform Circuit Simulation

- Analog, digital and mixed signal circuit simulations.
- Perform AC, DC, DC operating point and Transient analyses.
- Interactive Python plotting.



Create PCB Layout

- Design multilayer PCB layouts.
- Create custom footprints or Modify the existing footprints per requirement.
- Export the design in formats such as Gerber, PDF, SVG and several other formats.



Advanced Features

Model Builder

- Create/upload spice model for semiconductor devices.
- Modify or edit existing spice models for semiconductor devices.

Subcircuit Builder

- Create a new subcircuit at schematic level.
- Edit existing subcircuits down to schematic level.

NGHDL

- Using NGHDL user can create custom digital models using VHDL language. From simple multiplexers, counters to microcontrollers and ASICs, any custom component in the digital domain can be realized using the NGHDL tool.
- The created digital model can be used in either mixed-mode circuit or a standalone circuit operating in digital domain.
- NGHDL gives user the liberty to edit existing models supplied with eSim as per their needs, either for experimenting new ideas or to change the model as per their specific requirement.
- We are currently working towards including the support for simulations involving micro-controllers.

Circuit Simulation Project

FOSSEE, IIT Bombay, encourages students, faculty, and practitioners of electrical and electronics and allied fields to participate in the Circuit Simulation project using eSim. The Circuit Simulation project aims to port existing circuit designs and simulations using eSim.

The objectives of this project are to:

- Make available a large number of Circuit Simulation examples through crowdsourcing.
- Create a database of device models and subcircuits that can be distributed to other users.
- Form a community of users who can contribute and take advantage of the resources available.

The Spoken Tutorial Project

- Self-explanatory: uses simple language
- Audio-video: uses multisensory approach
- Small duration: has better retention
- Learner-centered: learn at your own pace
- Learning by doing: learn and practise simultaneously
- Empowerment: learn a new **FLOSS** (**F**ree/**L**ibre and **O**pen **S**ource **S**oftware)

Target Group

- Students- High School and College
- Working professional- Software users, developers and trainers
- Research scholars
- Community at large

Workshops

The Spoken Tutorial Project Team conducts workshops on Java and other FLOSS using spoken tutorials and gives certificates to those who pass an online test.
For more details, please visit
https://spoken-tutorial.org

Forum

We have developed a beginner friendly Forum to answer specific questions pertaining to any part of a particular tutorial.
For more details, please visit
https://forums.spoken-tutorial.org.

Director
Accurate Institute of Management & Technology
Greater Noida

The Spoken Tutorial Project
is funded by the
National Mission on Education through
Information and Communication Technology,
Ministry of Human Resource Development,
Government of India.

Contact us

Email: contact@spoken-tutorial.org
Website: https://spoken-tutorial.org

Forum help available to all learners

Content available in 22 Indian languages

IIT Bombay

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Spoken Tutorial
https://spoken-tutorial.org

Scan the QR code to visit Spoken Tutorial website

Java

National Mission on Education through Information and Communication Technology (NMEICT)
www.sakshat.ac.in

Funded by MHRD, Government of India.

Introduction

- Java is the most popular class-based, object-oriented, high-level programming language.

- Developed by James Gosling at Sun Microsystems and released in 1995 as a core component of Sun Microsystems' Java platform.

- Derives much of its syntax from C and C++.

- Is typically compiled to bytecode (class file). It can be run on any Java Virtual Machine (JVM) regardless of the architecture.

- Is specifically designed to have few implementation dependencies.

- Is Intended to let application developers write a code that runs on one platform & does not need to be recompiled to run on another.

Java has characteristics of Object-Oriented languages

- **Inheritance:** Creating new classes & extending them to reuse the existing code and adding new features as needed.

- **Encapsulation:** combining the information and providing the abstraction.

- **Polymorphism:** Providing different functionality by the functions having the same name, based on the signatures of the methods.

- **Dynamic binding:** Providing maximum functionality to a program about the specific type at runtime.

Features

Platform independence:
Key feature of Java language is write-once-run-anywhere (WORA) concept. With Java, you can run the code written on any system.

Simplicity:
Programs are easy to write and debug. Java provides a bug-free system due to strong memory management.

Portability: Java feature write-once-run-anywhere makes it portable, provided that the system has an interpreter for JVM.
Also, Java has standard data size irrespective of the OS or the processor.

Performance: Uses native code and lightweight process called threads.
The advance version of JVM uses adaptive and just-in-time compilation technique to improve the total performance.

Distributed: Widely used protocols like HTTP and FTP are developed in Java.
Internet programmers can call functions on these protocols and can access the files from any remote machine on the internet, rather than writing codes on their local system.

Secure:

- Programs in Java run under an area known as the sandbox.

- Security manager determines the accessibility options of a class like reading and writing a file to the local disk.

- Uses public key encryption system to allow the java applications to transmit over the internet, in a secure and encrypted form.

- The bytecode verifier checks the classes after loading.

Robust:
Java has

- Strong memory allocation.

- Automatic garbage collection mechanism.

- Powerful exception handling.

- Type-checking mechanism.

- A compiler that checks the program for any errors and interpreter checks any runtime errors and makes the system secure from crashes.

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The Spoken Tutorial project

*Self explanatory - uses simple language

*Audio-video - uses multisensory approach

*Small duration - has better retention

*Learner-centered - learn at your own pace

*Learning by doing - learn and practice simultaneously

*Empowerment - learn a new FOSS

Target Group

*Students - High School and College

*Working professional - Software users, developers and trainers

*Research scholars

*Community at large

Workshops

The Spoken Tutorial Project Team conducts workshops on PHP & MySQL and other FOSS using spoken tutorials and gives certificates to those who pass an online test.

For more details,please write to
contact@spoken-tutorial.org

The Spoken Tutorial Project is funded by the National Mission on Education through Information and Communication Technology, Ministry of Human Resource Development, Government of India.

Contact us

Email: contact@spoken-tutorial.org
Website: http://spoken-tutorial.org

IIT Bombay

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Accurate Institute of Management & Technology
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Spoken Tutorial

php MySQL

National Mission on Education through Information and Communication Technology (NMEICT)
www.sakshat.ac.in

Funded by MHRD, Government of India

http://spoken-tutorial.org

PHP

Introduction

PHP or "PHP : Hypertext Preprocessor" is a widely-used Open Source general-purpose scripting language that is especially suited for Web development and can be embedded into HTML. Its syntax draws upon C, Java and PERL, and is easy to learn.

The main goal of the language is to allow web developers to write dynamically generated web pages quickly, but you can do much more with PHP.

Uses of PHP •

- To create large websites
- For E-commerce like osCommerce, OpenCart
- To create online discussion forums like phpBB
- To create content management systems like Drupal, Joomla
- To create e-learning management systems like Moodle
- To develop web-based management tools like phpMyAdmin

And many more..

MySQL

Introduction

MySQL is a relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases. The SQL phrase stands for Structured Query Language. Applications which use MySQL data bases include: Joomla, Word Press, MyBB, phpBB, Drupal and other software built on the LAMP software stack.

A third party open source software "phpMyAdmin" is used as a web-based front end for managing MySQL databases easily and effectively. It is widely installed by Web hosts worldwide. Also it is included in the convenient LAMP, MAMP and WAMP software bundle installers.
MySQL is used in many high-profile, largescale World Wide Web products, including Wiki-pedia, Google and facebook.

Features of PHP & MySQL
- Scalability and flexibility
- High speed and high performance
- Data protection
- Comprehensive Application Development
- Management tools

And many more...

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PHP & MySQL

Benefits

- A large chunk of facebook, the world's leading social networking site, has a huge code based in PHP and it uses MySQL as database to store information of 1 billion+users!

- PHP is the most preferred language for web development by free-lance developers across the globe.

- Many free and open source CMS like Drupal, Moodle, etc. are created using PHP & MySQL.

- PHP & MySQL has a large user and develope community.

Links:

Original videos are available at
http://phpacademy.org

PHP Official Website -http://www.php.net

MYSQL Official Website -
http://www.mysql.com

W3Schools - PHP and MySQL Tutorials -
http://www.w3schools.com/php/default.asp
http://www.w3schools.com/sql/default.asp -

These tutorials will help you get started with PHP programming. In this series we will go through the basics of installing and getting PHP ready for development, the basic syntax and features of the language.

python™

What is Python?

Python is a general purpose, high level, remarkably powerful dynamic programming language used in a wide variety of application domains.

Why Python?

- Easy to read and learn
- Free and Open Source
- Useful for scientific computing
- Powerful interactive interpreter
- Extensive scientific libraries
- Well documented

Where can you use Python?

- Numeric and Symbolic computation
- 2D/3D Plotting
- User interfaces
- Parallel computing
- Machine Learning and Image Processing
- Game development
- Web development
- Much more...

Who uses Python?

- Google
- Yahoo
- Walt Disney
- NASA
- IBM
- YouTube
- nVIDIA
- Software - Blender, Motion Builder, Cinema 4D, etc.
- Games - Battle field 2 by EA sports, Crystal space 3D, etc.

Python is one of the most popular programming languages today, and therefore has been included in the CBSE curriculum. It easily performs tasks that proprietary tools like Matlab and Mathematica offer. Today leading companies are using Python extensively, hence there are better job opportu- . Learn Python, and grab the Opportunity!

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matplotlib django pandas SciPy

SymPy IPython Mayavi NumPy

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How can you learn Python

- **Spoken Tutorial** - The FOSSEE project has created a series of Spoken Tutorials on Python. Theses are available for learning, on the Spoken Tutorial website, free of cost. You can access these tutorials from this link

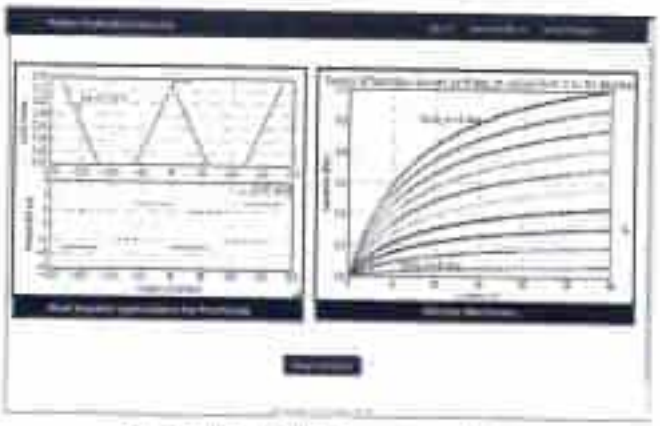
  python.fossee.in/spoken-tutorials

Spoken Tutorial website

- **Textbook Companion Internship** - Learn Python in a practical way by contributing to the Python Textbook Companion Internship. It aims to create Companions by coding solved examples from Standard textbooks, using Python. Participate and earn attractive honoarium and Certificate of Internship from FOSSEE, IIT Bombay! For more details, please visit:

  python.fossee.in/textbook-companion-project

Completed Book : Approx 453 books
Under Progress : Approx 113 books



Python Textbook Companion website

- **SELF Workshops** - The Spoken Tutorial Team conducts workshops on Python. These are completely free of cost, and are conducted without the need of any domain expert. Learn Python and obtain a certificate from Spoken Tutorial Project, IIT Bombay, upon successful completion of the post-workshop evaluation test. Please visit:

  python.fossee.in/spoken-tutorials

About us

Website:

http://python.fossee.in

Contact us

General help & Queries:

info@fossee.in
python@fossee.in

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Workshops

We organise basic Python workshops at IIT Bombay and also at other institutions in the country. During these workshops, the participant would use Spoken Tutorials to work on various exercises and examples.

Salient features of Workshops

- Free of cost.
- Recipe-based approach for beginners.
- High quality material taught by experts in the domain
- One may start using Python for curricular needs like plotting, symbolic & numeric calculations, right away.

SciPy *(International Conference on Python for Education & Scientific Computing)*

SciPy.in is a conference providing opportunity to spread the use of Python programming language in the Scientific Computing community in India. This conference has been successfully organised by **FOSSEE** for the last four years.

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Weblinks

SciPy:
http://scipy.in

FOSSEE:
http://fossee.in

Spoken Tutorials:
http://spoken-tutorial.org

Downloads:
http://fossee.in/Downloads

Mailing list for discussion and help:
http://fossee.in/mailman/listinfo/python-help

Contact us

General help, Queries & Workshop requests:
Email - info@fossee.in

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python

fossee
better SCIENCE AND ENGINEERING education

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SCIENCE AND ENGINEERING
education

Free and Open source Software in Science & Engineering Education.

About FOSSEE

The goal of this project is to enable the teachers and students of Science & Engineering in India to use open source software tools for all their computational needs, thereby improving the quality of instruction and learning. We are focusing on Python in the area of Scientific Computation.

We are at

The project is based at the **Indian Institute of Technology, Bombay (IIT-B).**

Funded by

The project is funded by **MHRD** as a part of the National Mission on Education through **Information and Communication Technology (NMEICT).**

We do

- Solve curricular exercises using **FOSS** tools.
- Organize sprints, generate relevant material.
- Design courses to teach the use of **FOSS** tools.
- Conduct workshops to spread the adoption of these tools.
- Conduct conferences to popularize these tools across the country.
- Create content for these courses - written material, spoken tutorials and Lectures.

We've done so far

- Conducted 35 workshops across India
- Developed Text Book Companion project that is running successfully
- Assisted several institutes in training faculty for usage of **Python**
- Conducted first SDES trial course at IIT Bombay and BMS college, Bangalore
- Held the International Conference on Scientific Python - **SciPy 2009/10/11/12**
- Conducted a 10-day workshop (5 weekends) on Python, Linux CLI and Latex tools for 750 teachers across the country

python

What is Python ?

Python is a general-purpose, high-level programming language with simple, easy to learn syntax that emphasises code readability.

Why Python ?

- Easy to learn
- Portable and cross-platform
- Full-fledged programming language
- Excellent scientific computing libraries
- Supports both Procedural and Object Oriented programming
- SAGE, NumPy, SciPy, Matplotlib and Cython make Python an Open Source alternative to MATLAB, Mathematica, Magma and Maple

Applications of Python

- User interfaces
- 2D/3D Graphics
- Web development
- Exploration and Visualisation
- Numeric and Symbolic computation
- Game development & other domains
- High performance Parallel Computing

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Projects of Python

Spoken Tutorials

A Spoken Tutorial refers to explaining any computer-based activity with the screen cast and a narration. The screen-casting software captures all the activities on the screen along with the narration to play it back as a video clip.

The Spoken Tutorial can be used to explain the steps involved in carrying out any screen-based activity, such as using the features of some software.

SDES Course

(Software Development techniques for Engineers & Scientists)

Engineering students use computers for a large number of curricular tasks - mostly computation centered. This course is intended to train those students in good software practices and tools for producing code and documentation.

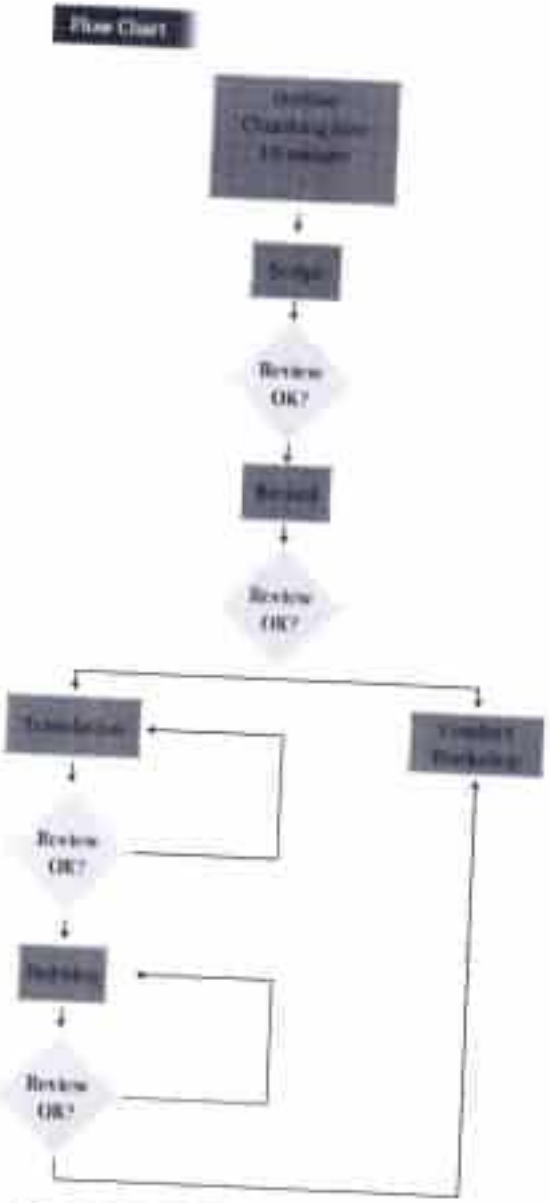
Textbook Companion Project

The Textbook Companion Project aims to port worked out examples and select exercise problems from standard text books using Open Source Software tools, such as Python. Any standard text book can be used for this purpose.

The objectives of the project are:

- To develop programming logics for the problems given in the textbooks
- Create a repository with solutions to the problems, for future reference

Flow Chart



COME PARTNER WITH US !
Bridge the Digital Divide !

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Help a student in rural India
learn FOSS systems and become IT literate

The Spoken Tutorial project is the initiative of the 'Talk To A Teacher' activity of the National Mission on Education through Information and Communication Technology launched by the Ministry of Human Resource Development, Government of India.

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Spoken Tutorials

http://spoken-tutorial.org

Spoken Tutorial Technology

Developed at IIT Bombay

National Mission on Education through Information and Communication Technology (NMEICT)
www.sakshat.ac.in

An MHRD initiative

Talk To A Teacher

http://spoken-tutorial.org/NMEICT-Intro

What is a Spoken Tutorial ?

A Spoken Tutorial explains the steps involved in carrying out a computer based activity - such as using the features of some software - with the help of a screencast and narration. A screencasting software captures all the activities on the screen along with the narration and plays it back as a movie. This movie, 10 minutes long, is called the Spoken Tutorial. The Spoken Tutorial serves as a valuable self-study tool.

1.Introduction to Spoken tutorials

- It gives a bird's eye view of the spoken tutorial processes.

2.Creation of a Spoken Tutorial through Camstudio

- Demonstrates the use of Camstudio, which is a screen recording software for Windows operating system.
- Camstudio enables recording and play-back of all the activities performed on a computer screen.

3.Creation of a Spoken Tutorial through record MyDesktop

- Demonstrates the use of recordMyDesktop, which is a screen recording software for Linux operating system.
- recordMyDesktop enables recording and play back of all the activities performed on a computer screen.

4.Dubbing a Spoken Tutorial using Movie Maker

- Demonstrates the process of dubbing from one language to another using Movie Maker for Windows operating system.

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5.Editing a Spoken Tutorial using Movie Maker

- Demonstrates the process of editing a video using Movie Maker for Windows operating system.

6.Dubbing a Spoken Tutorial using Audacity & ffmpeg

- Demonstrates the process of dubbing from one language to another using Audacity, which could be used for Mac OS X, Microsoft Windows, GNU/Linux, and other operating systems.
- FFmpeg is a complete, cross-platform video and audio converter solution to record, convert and stream audio and video. It can also convert between arbitrary sample rates and resize a video on the fly, with a high quality polyphase filter.

7.Guidelines for the script writers

- Conveys the guidelines that should be followed while writing a script for a Spoken Tutorial.
- We are in the process of creating it. The document on this topic is available at http://spoken-tutorial.org/wiki/index.php/How_to_write_a_Script_for_Spoken_Tutorials

8.Guidelines for recording and narration

- Conveys the guidelines that should be followed while recording and narrating a Spoken Tutorial.

9.Guidelines for translation & dubbing

- Conveys the guidelines for translating and dubbing a Spoken Tutorial from one language to another.
- We are in the process of creating it. The document on this topic is available at http://spoken-tutorial.org/wiki/index.php/Dubbing_Stages

10.Guidelines for Campus Ambassador

- Introduces the Campus Ambassador programme of Spoken Tutorial project, wherein students can become a mentor in their college, motivate and lead a team of students to prepare Spoken Tutorials.
- It explains the criteria, honorariums and other elements involved in the Campus Ambassador programme.

11.How to conduct workshops using Spoken Tutorials?

- Explains the process of conducting workshops in different institutes or colleges using Spoken Tutorials.
- We are in the process of creating it.

Link for workshop

http://www.spoken-tutorial.org/wiki/index.php/Workshop

Other brochures :

1. Introduction
2. Campus Ambassador Programme

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Log on to

http://spoken-tutorial.org
http://spoken-tutorial.org/wiki

Contact us at

sptutemail@gmail.com
contact@spoken-tutorial.org

The Spoken Tutorial Project

- Self-explanatory: uses simple language
- Audio-video: uses multisensory approach
- Small duration: has better retention
- Learner-centered: learn at your own pace
- Learning by doing: learn and practise simultaneously
- Empowerment: learn a new **FLOSS** (**F**ree/**L**ibre and **O**pen **S**ource **S**oftware)

Target Group

- Students- High School and College
- Working professional- Software users, developers and trainers
- Research scholars
- Community at large

Workshops

The Spoken Tutorial Project Team conducts workshops on C and C++ and other FLOSS using spoken tutorials and gives certificates to those who pass an online test.
For more details, please visit
https://spoken-tutorial.org

Forum

We have developed a beginner friendly Forum to answer specific questions pertaining to any part of a particular tutorial.
For more details, please visit
https://forums.spoken-tutorial.org

The Spoken Tutorial Project
is funded by the
National Mission on Education through
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Ministry of Human Resource Development,
Government of India

Contact us

Email: contact@spoken-tutorial.org
Website: https://spoken-tutorial.org

Forum help available to all learners

Content available in 22 Indian languages

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THE C PROGRAMMING LANGUAGE

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Target Group

*Students - High School and College

*Working professional - Software users, developers and trainers

*Research scholars

*Community at large

Workshops

The Spoken Tutorial Project Team conducts workshops on LaTeX and several FOSS using spoken tutorials and gives certificates to those who pass an online test.

For more details, please write to us
contact@spoken-tutorial.org

The Spoken Tutorial Project is funded by the National Mission on Education through Information and Communication Technology, Ministry of Human Resource Development, Government of India.

Contact us

Email: contact@spoken-tutorial.org

Website: http://spoken-tutorial.org

Spoken Tutorial

LaTeX

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www.sakshat.ac.in

Funded by MHRD, Government of India

http://spoken-tutorial.org

What is LaTeX?

LaTeX is a document preparation system for high-quality typesetting. Often used for technical or scientific documents, it can be used for almost any form of publishing letter, report, textbook, etc.
LaTeX lets authors get with writing documents without being bothered about document design.

Download LaTeX from
http://tug.org/begin.html

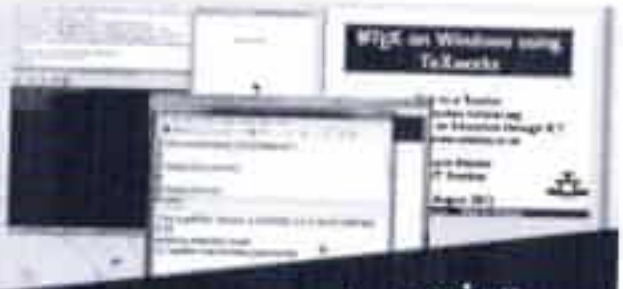
Benefits of LaTeX:

Benefits of LaTeX:

*Works on all OS: Linux, Windows, Mac OSX.
*Easily typesets journal articles, technical reports, books and slide presentations.
*Controls large documents containing sectioning, cross-references, tables and figures.
*Typesets complex mathematical formulae with ease.
*Advanced typesetting available for mathematical equations.
*Automatic generation of bibliographies and indexes.
*Multi-lingual typesetting.
*Inclusion of artwork and process or spot colour.
*Uses PostScript or Metafont fonts.
*Very active user community.

Xfig

*Xfig is a free and open source vector graphics editor. It is a drawing tool for use on the Linux and UNIX services.
*Xfig was written by Supoj Sutanthavibul in 1985.
*In Xfig, figures may be drawn using objects such as circles, boxes, lines, spline curves, text etc.
*It is also possible to import images in formats such as GIF, JPEG, EPS, PostScript etc.
*These objects can be created, deleted, moved or modified. Attributes such as colours or line styles can be selected in various ways.
*Xfig has a facility to print figures to a Post-Script printer too.
*Convenient feature is the PSTEX or PDFTEX export format. This allows a smooth integration of Xfig-generated images into LaTeX documents.
*Most operations in Xfig are performed using the mouse. But some operations may also be performed using keyboard (accelerators) shortcuts.
*The interface is designed for a three-button mouse, although it is also possible to use a two button or a one button mouse with appropriate emulation.



Tutorials in the series

*LaTeX on Windows using TeXwork
*What is Compiling?
*Letter Writing
*Report Writing
*Mathematical Typesetting
*Equations
*Tables and Figures
*Beamer
*Bibliography
*Inside story of Bibliography
*Simple block diagram
*Feedback control diagram
*Feedback diagram with Maths

These tutorials are also available in many Indian languages such as English, Hindi, Bengali, Bhojpuri, Gujarati, Kannada, Marathi, Sanskrit, Tamil, Telugu.

Course: Enhancing Soft Skills and Personality

Course Code: noc17-hs11

Session: 2016-17

Duration: 8 Weeks

Assessment procedures: Weekly Assignment (25%) + proctored certification Exam (75%)

Curriculum of the Course:

Week 1:

- Highlights of Developing Soft Skills and Personality Course-1-24
- Highlights of Developing Soft Skills and Personality Course-25-48
- Definitions and Types of Mindset
- Learning Mindsets
- Secrets of Developing Growth Mindsets

Week 2:

- Importance of Time and Understanding Perceptions of Time
- Using Time Efficiently
- Understanding Procrastination
- Overcoming Procrastination
- Don't Say "Yes" to Make Others Happy!

Week 3 :

- Types of People
- How to Say "No"
- Controlling Anger
- Gaining Power from Positive Thinking-1
- Gaining Power from Positive Thinking-2

Week 4 :

- What Makes Others Dislike You?
- What Makes Others Like You?-1
- What Makes Others Like You?-2
- Being Attractive-1
- Being Attractive-2

Week 5 :

- Common Errors-1
- Common Errors-2
- Common Errors-3
- Common Errors-4
- Common Errors-5

Week 6 :

- Humour in Communication
- Humour in the Workplace
- Function of Humour in the Workplace
- Money and Personality

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- Managing Money

Week 7 :

- Health and Personality
- Managing Health-1: Importance of Exercise
- Managing Health-2: Diet and Sleep
- Love and Personality
- Managing Love

Week 8 :

- Ethics and Etiquette
- Business Etiquette
- Managing Mind and Memory
- Improving Memory
- Care for Environment
- Highlights of the Course

List of students enrolled

S. No	Name of Students
1	Anand Kumar

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Course: Python for Data Science

Course Code: noc21-cs78

Session: 2020-21

Duration: 4 Weeks

Assessment procedures: Weekly Assignment (25%) + proctored certification Exam (75%)

Curriculum of the Course:

Week 1:

- Basics of Python Spyder (Tool)

Week 2:

- Sequence data types and associated operations

Week 3:

- Pandas data frame and data frame related operations on Toyota Corolla dataset
- Data visualization on Toyoto Corolla dataset using matplotlib and seaborn libraries
- Control structures using Toyota Corolla dataset

Week 4:

- CASE STUDY-Regression, Classification

List of students enrolled

S. No.	Name of Student
1.	Chirag Jain
2.	Ankit Pareek
3.	Ashwani Malav
4.	Ayush jangir
5.	Bhanu Pratap Singh Rathore
6.	mahak hussain
7.	Shubham jain
8.	Kanak Agrawal
9.	Keshav Hinger
10.	Khushi Garg
11.	Jitisha Gupta
12.	Kunika Khandelwal
13.	Mohit sunda
14.	NEHA
15.	neeraj garg
16.	Dr. Pankaj Dadheech
17.	Prafull Bhargava
18.	PRERNA VERMA
19.	Ritik Kala
20.	Aman Saini
21.	Sarthak Bhatia
22.	Vansh Pradeep Singh Rathore
23.	Manmath Narain Tiwari

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Greater Noida

Course: Enhancing Soft Skills and Personality

Course Code: SS

Session: 2018-19

Duration: 8 Weeks

Curriculum of the Course:

Week 1:

- Highlights of Developing Soft Skills and Personality Course-1-24
- Highlights of Developing Soft Skills and Personality Course-25-48
- Definitions and Types of Mindset
- Learning Mindsets
- Secrets of Developing Growth Mindsets

Week 2:

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- How to Say "No"
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- Gaining Power from Positive Thinking-1
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- What Makes Others Like You?-1
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- Common Errors-4
- Common Errors-5

Week 6 :

- Humour in Communication
- Humour in the Workplace
- Function of Humour in the Workplace
- Money and Personality

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Course: Better Spoken English

Course Code: SPOKEN ENGLISH

Session: 2018-19

Duration: 12 weeks/40 topics

Curriculum of the Course:

1. Why a course in Spoken English?
2. Student Presentation : Cycle I : Who I am
3. Feed Back on Presentation
4. Aspects of Theatre in Formal Presentation : Grooming, Body Language, Eye Contact, Voice Modulation
5. Linguistic Aspects of Mishearing
6. A "Good" Tempo of Speech in English
7. Announce Topic for Presentation : Cycle II :A Civic Problem in My Place
8. Research and Organization of Presentation I : Sources of Information
9. Research and Organization of Presentation II : Tables, Charts, Graphs…
10. Making Power Point Slides and Other Presentation Aid
11. Criteria for (Self) Evaluation of Presentation
12. Student Presentation : Cycle II : A Civic problem in My Place I
13. Student Presentation : Cycle II : A Civic problem in My Place II
14. Feedback on Presentation Cycle II
15. Announce Topic for Cycle III :A Managerial Solution
16. Grammar of Phrasal Pause in English
17. Rhythm in Spoken English :All I want's a room somewhere/ Far away…
18. Rhythm in Spoken English – II
19. Phrasal Pause in Spoken English
20. Phrasal Pause in Spoken English – II : Numbers, Units of Weight, Height…
21. Listening to Units of Time, Weight, Distance, Etc.: Take a Break
22. Word Stress in English : Unique Features
23. Stress in Simple English Words – I
24. Stress in Simple English Words – II
25. Stress in Derived Words in English – I
26. Stress in Derived Words in English – II
27. Student Presentation Cycle III : A Solution – I
28. Student Presentation Cycle III : A Solution – II
29. Student Presentation Cycle III : A Solution – III
30. Feedback on Presentation Cycle III
31. Announce Topic for Cycle IV : Improving a Product/a Project
32. Listening to a Technical Conversation :Bid for Power
33. Preparing for and Presenting a Flow Chart, Diagram, Drawing, Etc.
34. Some "Difficult" Sounds in English – I
35. Some "Difficult" Sounds in English – II
36. Student Presentation : Cycle IV – I
37. Student Presentation : Cycle IV –
38. Student Presentation : Cycle IV –
39. Feed back on Presentation

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40. Conclusion of the Course

List of students enrolled

S. No	Name of Student
1	Aakriti Dwivedi
2	Aman Jain
3	Abhishek Patidar
4	Aman Rawat
5	Ananya Tiwari
6	Anmol Kumar Joshi
7	Ankit Sharma
8	Ashita Gupta
9	Ashutosh Sharma
10	Astha Khandelwal
11	Gautam Khatri
12	Ajay Gupta
13	Suraj Bhan Singh Gocher
14	Prabhat Jain
15	Karan Choudhary
16	Kaushal Kumar
17	Manvi Asija
18	Mayank Dhaka
19	Rajat Sharma
20	Raman Kumar
21	Rohit Kucheria
22	Pradeep Saini
23	Sushobhit Nigam
24	Unnati
25	Vijay
26	Rajat Verma
27	Vishal Kumar Soni

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Course: Refrigeration And Air-Conditioning

Course Code:RAC

Session: 2018-19

Duration: 8 Weeks

Curriculum of the Course:

Week-1: Recapitulation of Thermodynamics, Introduction to Refrigeration, Air Refrigeration Cycle, Aircraft Refrigeration Cycles.
Week-2: Aircraft Refrigeration Cycles, Vapour Compression Cycle, P-h Charts, Actual Vapour Compression Cycle
Week-3: Actual Vapour Compression Cycle, Compound Compression with Intercooling, Multiple Evaporator and Cascade System, Problem Solving
Week-4: Refrigerants, Vapour Absorption Systems.
Week-5: Introduction to Air-conditioning, Properties of Moist Air, Psychrometric Chart, Psychrometric Processes.
Week-6: Psychrometric Processes, Infiltration Design Conditions, Cooling Load.
Week-7: Cooling Load, Air Distribution System, Problem Solving, Air-Conditioning Systems
Week-8: Human Physiology, Thermal Comfort, Indoor Environmental Health, Problem Solving

List of students enrolled

S. No	Name of Students
1	Ravindra Sharma
2	Deepesh Agrawal

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Course: Machine Learning, ML

Course Code: ML

Session: 2018-19

Duration: 8 Weeks

Curriculum of the Course:

Week 1: Introduction to the Machine Learning course
Week 2: Characterization of Learning Problems
Week 3: Forms of Representation
Week 4: Inductive Learning based on Symbolic Representations and Weak Theories
Week 5: Learning enabled by Prior Theories
Week 6: Machine Learning based Artificial Neural Networks
Week 7: Tools and Resources + Cognitive Science influences
Week 8: Examples, demos and exam preparations

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Course: Internet of Things (IOT)

Course Code:IOT

Session: 2017-18

Duration: 8 Weeks

Curriculum of the Course:

Week 1:
- Course Overview
- Introduction to RDBMS

Week 2:
- Structured Query Language (SQL)

Week 3:
- Relational Algebra
- Entity-Relationship Model

Week 4:
- Relational Database Design

Week 5:
- Application Development
- Case Studies
- Storage and File Structure

Week 6:
- Indexing and Hashing
- Query Processing

Week 7:
- Query Optimization,
- Transactions (Serializability and Recoverability)

Week 8:
- Concurrency Control
- Recovery Systems
- Course Summarization

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Course: Entrepreneurship Development Programme

Session: 2020-21

Duration: 30 Hours

Assessment procedures: Minimum attendance criteria of 75% attendance and Written exam at the end of course

Curriculum of the Course:

Session No.	Topic/Content
1	Entrepreneurship Management- Introduction & Framework
2	Corporate Entrepreneurship/ Intrapreneurship
3	Entrepreneurship Organizations and Strategic Management
4	Managing People and Performance in Entrepreneurial Organizations
5	Innovation and Entrepreneurial Managers
6	Finance & Accounts for Entrepreneurship
7	Managerial Competencies as an Entrepreneurial Managers
8	Women & Entrepreneurship
9	Risk Management for Entrepreneurs
10	Analysis of Competencies & Assessing Potential Entrepreneurs
11	Business Opportunity Identification & Business Plan Preparation
12	Small Business Management
13	Agro Food Processing
14	Marble Industry of Rajasthan
15	Demystifying the Handicraft Industry of Rajasthan
16	Growth and Challenges of Gem And Jewellery Industry of Rajasthan
17	Designing & Managing Support Services for Potential Entrepreneurs
18-21	Effective Business Counseling
22-28	Field Visits to Training/ Industrial support Institutions and Small Enterprises
29-30	Debrief, Presentations and Valediction Ceremony

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Course: Deep Learning

Course Code: DL

Session: 2018-19

Duration: 12 Weeks

Curriculum of the Course:

Week 1:
- History of Deep Learning
- Deep Learning Success Stories
- McCulloch Pitts Neuron

Week 2:
- Multilayer Perceptrons (MLPs)
- Representation Power of MLPs
- Sigmoid Neurons
- Gradient Descent

Week 3:
- Feed Forward Neural Networks
- Back propagation

Week 4:
- Gradient Descent (GD)
- Momentum Based GD
- Nesterov Accelerated GD
- Stochastic GD

Week 5:
- Principal Component Analysis and its interpretations
- Singular Value Decomposition

Week 6:
- Auto encoders and relation to PCA
- Regularization in auto encoders
- Denoising auto encoders
- Sparse auto encoders

Week 7:
- Regularization: Bias Variance Tradeoff
- L2 regularization
- Early stopping
- Dataset augmentation

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Week 8:

- Greedy Layerwise Pre-training
- Better activation functions
- Better weight initialization methods
- Batch Normalization

Week 9:

- Learning Vectorial Representations Of Words

Week 10:

- Convolutional Neural Networks
- LeNet, AlexNet
- ZF-Net, VGGNet
- GoogLeNet
- ResNet

Week 11:

- Recurrent Neural Networks
- Back propagation through time (BPTT)
- Vanishing and Exploding Gradients
- Truncated BPTT
- GRU
- LSTMs

Week 12:

- Encoder Decoder Models,
- Attention Mechanism,
- Attention over images

List of students enrolled

S. No	Name of Student
1	Aman Kumar Gautam
2	Anshul Kumar Garg
3	Ayushi Jain
4	Shivam Pandey
5	Mohit Sharma
6	Shiwanshu Mani

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Course: Programming, Data Structures and Algorithms using Python

Course Code: DSA

Session: 2019-20

Duration: 8 Weeks

Curriculum of the Course:

Week 1:

- Informal introduction to programming, algorithms and data structures via gcd, Downloading and installing Python, gcd in Python: variables, operations, control flow - assignments, conditionals, loops, functions.

Week 2:

- Python: types, expressions, strings, lists, tuples, Python memory model: names, mutable and immutable values, List operations: slices etc., Binary search, Inductive function definitions: numerical and structural induction, Elementary inductive sorting: selection and insertion sort, In-place sorting

Week 3:

- Input-Output Handling in Java
- Basic algorithmic analysis: input size, asymptotic, complexity, O( ) notation, Arrays vs lists, Merge sort, Quicksort, Stable sorting

Week 4:

- Dictionaries, More on Python functions: optional arguments, default values, Passing functions as arguments, Higher order functions on lists: map, lter, list comprehension

Week 5:

- Exception handling, Basic input/output, Handling files, String processing.

Week 6:

- Backtracking: N Queens, recording all solutions, Scope in Python: local, global, nonlocal names, Nested functions, Data structures: stack, queue, Heaps

Week 7:

- Abstract datatypes, Classes and objects in Python, "Linked" lists: find, insert, delete, Binary search trees: find, insert, delete, Height-balanced binary search trees.

Week 8:

- Efficient evaluation of recursive definitions: memorization, Dynamic programming: examples, Other programming languages: C and manual memory management, Other programming paradigms: functional programming.

List of students enrolled

S. No.	Name of Student
1.	Prateek Agarwal

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Course: Python

Course Code: Python

Session: 2018-19

Duration: 4 months

Assessment procedures: proctored certification Exam (100%)

Curriculum of the Course:

- 1 Module 1: Basic Plotting
  - 1.1 Getting started with ipython
  - 1.2 Using the plot command interactively
  - 1.3 Embellishing a plot
  - 1.4 Saving plots
  - 1.5 Multiple plots
  - 1.6 Subplots
  - 1.7 Additional features of IPython
- 2 Module 2: Plotting Experimental Data
  - 2.1 loading data from files
  - 2.2 Plotting the data
  - 2.3 Other types of plots
  - 2.4 Plotting charts
- 3 Module 4: Handling Large Data Files
  - 3.1 Getting started with lists
  - 3.2 Getting started with for
  - 3.3 Getting started with strings
  - 3.4 Getting started with files
  - 3.5 Parsing data
  - 3.6 Statistics
- 4 Module 5: Arrays and Matrices
  - 4.1 Getting started with arrays
  - 4.2 Accessing parts of arrays
  - 4.3 Image manipulation using Arrays
  - 4.4 Basic Matrix Operations
  - 4.5 Advanced Matrix Operations
  - 4.6 Least square fit
- 5 Module 6: Python Language: Basics

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- 5.1 Basic datatypes & operators
- 5.2 Sequence datatypes
- 5.3 Input/output
- 5.4 Conditionals Statements
- 5.5 Loops

- 6 Module 7: Python Language: Datastructures
  - 6.1 Manipulating lists
  - 6.2 Manipulating strings
  - 6.3 Getting started with tuples
  - 6.4 Dictionaries
  - 6.5 Sets in Python
- 7 Module 8: Python Language: Advanced
  - 7.1 Getting started with functions
  - 7.2 Advanced features of functions
  - 7.3 Using python modules
  - 7.4 Writing python scripts
  - 7.5 Testing and debugging
  - 7.6 Handling Errors and Exceptions

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Training | Development | Placement

Django Web Framework

- What is a Framework
- Introduction to Django
- Django – Design Philosophies
- History of Django
- Why django and Features
- Environment setup
- Web Server

MVC Pattern

- MVC Architecture vs MVT Architecture
- Django MVC – MVT Pattern

Getting Started with Django

- Creating the first Project
- Integrating the Project to sublime text
- The Project Structure
- Running the server
- Solving the issues and Migrations
- Database Setup
- Setting Up Your Project

Create an Application

- What Django Follows
- Structure of django framework
- Model Layer
- What are models
- Model fields
- Querysets

Django – Admin Interface

- Starting the Admin Interface
- Migrations

Django – Admin Interface

- Starting the Admin Interface
- Migrations

Views Layer

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- Simple View
- Basic view(displaying hello world)
- Functional views, class based views

Django – URL Mapping

- Organizing Your URLs
- Role of urls in djnago
- Working urls
- Forms
- Sending Parameters to Views
- Templates layer
- The Render Function

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Django Template Language (DTL)

- Role of template layer in django
- Filters,Tags, Tag if, Tag for, Block and Extend Tags
- Comment Tag, Usage of templates
- Extending base template

Django – Models

- Creating a Model
- Manipulating Data (CRUD)
- Linking Models
- Django – Page Redirection

Django – Sending E-mails

- Sending a Simple E-mail
- Sending Multiple Mails with send_mass_mail
- Sending HTML E-mail
- Sending HTML E-mail with Attachments

Django – Form Processing

- Using Form in a View
- Usage of forms
- Crud operations using forms
- Crispy forms in django

Django – File Uploading

- Uploading an Image
- Django – Apache Setup

Django – Cookies Handling

- Django – Sessions
- Django – Comments

Django Admin

- Creating Super User
- Using admin in Django
- Adding models to admin
- Adding model objects using admin
- Displaying in cmd using querysets
- Admin interface Customization

DjangoORM(Object Relational Mapping)

DjangoAPI(Application Program Interface)

- Creating a serializer.
- Working with API views.
- Filtering back ends.
- Enabling pagination.
- Executing CRUD operations.
- Managing serializer fields.
- Testing API views.

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Static files

- Loading css files into templates Loading js files into templates
- Uploading image using models User authentication
-
-

Sample Projects and Websites

- BLOGs Forums
- Ecommerce
- WebSite

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JAVA EXPERT

INTRODUCTION TO JAVA

- Why Java was Developed
- Application Areas of Java
- History of Java
- Platform Independency in Java
- USP of Java: Java Features
- Sun-Oracle Deal
- Different Java Platforms
- Difference between JDK,JRE,JVM
- Java Versions
- JVM Architecture
- Installing Java on Windows
- Understanding Path Variable: Why Set Path

CREATING FIRST JAVA PROGRAM

- Understanding Text Editors to Write Programs
- How to compile java file
- Byte Code and class file
- How to run class file

JAVA LANGUAGE FUNDAMENTALS

- Identifiers
- Keywords
- Variables
- Literals
- Data Types
- Operators
- Comments
- Looping Statements
- Condition Statements
- Type Casting

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OOP IMPLEMENTATION (PIE)

- Why OOP
- OOP Concepts with Real life examples
- Class& it's Syntax
- Object& it's Syntax
- Reference Variable
- Constructors
- Instance(Non-Static)& Static Variables
- Instance(Non-Static) & Static Methods
- this Keyword and it's usages
- Object & Static Initializers(Anonymous Blocks)
- Understanding '+' Operator

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- Inheritance& it's Syntax
- Types of Inheritance
- Object Class as Root of Java Class Hierarchy
- Variable Hiding
- Method Hiding
- Method Overriding
- Method Overloading
- Super keyword and it's usages
- Final keyword and it's usages
- Constructor Chaining
- Upcasting and Downcasting
- Static &Dynamic Binding
- Run Time Polymorphism
- Abstract Keyword(Abstract classes and methods)
- Understanding Interfaces
- Implementation of Encapsulation
- Association with Implementation

PACKAGES

- Understanding Packages
- Setting Class path
- Reading Input from Keyboard
- Access Modifiers

NESTED TYPES

- Static Nested Class
- Non-static Nested Class
- Local Class
- Anonymous Class
- Nested Interface

ARRAYS

- General Definition of Array
- Advantages from Array
- Arrays in Java
- 1-d Arrays
- 2-d Arrays
- Jagged Arrays
- Array of reference type
- Operations on Arrays

COMMAND LINE ARGUMENTS AND WRAPPER CLASSES

- How to read command line arguments
- Wrapper Classes
- Parsing of Numeric Strings
- String representation of Primitives

EXCEPTION HANDLING

- Types of Runtime Errors
- Understanding Exceptions
- Exception Class Hierarchy
- Try & Catch Blocks
- Patterns of Catch Block
- Nested Try statements
- Throw, throws and finally
- Creating Custom Exceptions
- Checked & Unchecked Exceptions
- Assertion

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WORKING WITH STRINGS

- What is String
- String Class
- Creating String Object
- Operations on String
- String Buffer Class and it's Methods
- Difference between String and StringBuffer class
- String Builder Class and it's Methods
- Difference between StringBuffer and StringBuilder

SWING

- Introduction to AWT
- Introduction to Swing Components
- Look And Feel of Swing Components
- MVC Architecture of Swing Components
- Working with Image
- Advance Swing Components
- JOptionPane,JTree,JTable,JTabbedPane
- JfileChooser,JcolorChooser
- Menu Components
- JMenu
- JMenuItem
- JMenubar

MULTITHREADED PROGRAMMING

- Multitasking: Why Concurrent Execution
- Multiprocessing v/s Multithreading
- Main Thread (Default Java Thread)
- Creating Child Threads and understanding context switching
- Thread States
- Thread Group
- Thread Synchronization: Methods and Blocks
- Inter-Thread communication
- Daemon Threads
- Deadlock

I/O STREAMS

- What is I/O
- Why Need Streams
- Byte Streams and Character Streams
- Read/Write operations with file
- Scanner Class
- Object Serialization& Deserialization
- Transient keyword
- File Class and it's Methods

SOCKET PROGRAMMING

- Understanding Fundamentals of a Network
- Socket and ServerSocket Classes
- InetAddress Class
- DatagramSocket and DatagramPacket Classes
- URL,URLConnection,HttpURLConnection Classes

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EXTENDED & UTILITY CONCEPTS

- Generics
- Lambda Expression
- Annotations
- Object Cloning
- Vargs
- Static-import
- Enum
- Static, Default and Private Methods of Interface
- Var Type
- Java Modules

COLLECTIONS FRAMEWORK

- What is Collection?
- What is Framework?
- Collections Framework
- Core Interfaces
- Collection, List, Queue,Deque
- Set,NavigableSet, SortedSet
- Map,NavigableMap, SortedMap
- Core Classes
- ArrayList, LinkedList,PriorityQueue,ArrayDeque
- HashSet,LinkedHasSet,TreeSet,
- HashMap,IdentityHashMap,WeakHashMap,LinkedHashMap,Tree Map
- Accessing a Collection via an Iterator
- Accessing List via ListIterator
- Accessing a Collection via for each loop
- Working with User Defined Objects
- The Comparator and Comparable Interfaces
- The Legacy classes and Interfaces.
- Enumeration, Vector ,Stack
- Hashtable, Properties

DATE & TIME API

- java.util.Date
- java.util.Calender
- java.sql.Date

JODA API

- java.time.LocalDate
- java.time.LocalTime
- java.time.LocalDateTime

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SYSTEM PROPERTIES & INTERNATIONALIZATION (I18N)

- Understanding Locale
- Resource Bundle
- Usage of properties file
- Fetching text from Resource Bundle
- Displaying the text in HINDI
- Displaying date in Hindi

INTRODUCTION TO SQL(PROJECT BASED)

DATABASE PROGRAMMING USING JDBC

- Need Of JDBC
- JDBC Drivers
- Statement, PreparedStatement, CallableStatement
- Scrollable and Updatable ResultSet
- Batch Updates
- Transaction
- Metadata

JAVA EE(JAVA PLATFORM ENTERPRISE EDITION)

- Understanding the Concept of Java EE : JEE Specification
- Java EE Architecture
  - Single Tier
  - Two Tier
  - Three Tier
  - N-Tier
- Java EE Components
- Web Components
- Distributed(Business) Components
- Java EE Containers& Servers
- Web Container& Web Server(Apache Tomcat)
- EJB Container& Application Server(Weblogic,Glassfish,Websphere)
- Java EE Services
  - JNDI Service
  - Java Transaction Service
  - JAAS
  - JMS

JAVA SERVLET

- Introduction to web programming
- Role of Servlet in web programming
- Servlet Lifecycle
- Servlet with Annotations
  - @WebServlet
  - @WebInitParam
  - @WebListener
  - @WebFilter
  - @MultipartConfig
- Request Dispatching
- Parameters & Attributes and their differences
- ServletConfig and ServletContext
- File Uploading and Downloading
- Session Tracking&State Management
  - Cookie
  - Url Rewriting
  - Hidden Form Field
  - Session Object
- Events & Listeners

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- Dependency Injection
- Refreshing Servlet
- Filters

JAVA SERVER PAGES (JSP) & JSTL

- JSP Architecture
- JSP Elements
- JSP Objects
- Understanding JavaBeans
- Custom Tags
- Using tags of JSTL
- Expression Language

PROJECT CLASSES

- Front End Coding
- FORM DESIGNING
  - HTML
  - CSS
  - JAVA SCRIPT
  - BOOTSTRAP
- Back End Coding
- DATABASE DESIGNING
- Connecting forms to database
- Writing Business Logic
- Project Hosting

DESIGN PATTERN

- Why Design Patterns...?
- Front Controller
- Composite View
- Factory Pattern
- Singleton Pattern
- DAO Pattern

JAVA MAIL API

- Email System and Protocols
- Sending & Receiving Mails
- Handling Attachments

INTRODUCTION TO DISTRIBUTED PROGRAMMING

- RMI
- Web Services

INTRODUCTION TO RESTFULL SERVICES

- @PathParam
- @Path
- @FormParam
- @QueryParam
- @DefaultValue

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Communication Skills

S.No.	Topics	Duration (in hours)
1	Communication	4
2	Body Language	4
3	Public Speaking	4
4	Corporate Culture Training	10
5	Email Writing	4
6	Resume Writing	5
7	Interview Skills	10
8	Self Introduction	5
9	Group Discussion	8
10	Dining Etiquettes	2
11	Inter Personal Skills	4
	Total	**60 hrs**

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Quantitative Aptitude + Logical Reasoning

S.No.	Topics	Duration (in hours)
1	Number System, LCM & HCF	4
2	Percentage, Profit Loss & Discount	4
3	Ratios, Proportions & Partnerships, Ages	4
4	Averages	4
5	Mixtures & Alligations	4
6	Time & Work, Pipes & Cisterns	4
7	Time, Speed & Distance	4
8	Simple & Compound Interest	4
9	Venn ddDiagram	4
10	Syllogisms	2
11	Blood Relations & Directions	4
12	Number Series, Letter Series	2
13	DI : Pie chart, Tabular, Graphical	3
14	Simplification	2
15	Seating and Circular Arrangements	4
16	Elementary Statistics	4
17	Geometry, Mensuration	3
	Total	**60 hrs**

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Course: Perl

Course Code: Perl

Session: 2017-18

Duration: 4 Months

Assessment procedures: Proctored certification Exam (100%)

Curriculum of the Course:

Basic Level

Topics

1. **Overview and Installation of Perl**
   - Installation of Perl 5.14.2 on Ubuntu Linux
     - Installing XAMPP in Linux

(XAMPP is a cumulative package consisting of Apache, PERL, PHP and MySQL. Packages is available for Linux)

- Default Webserver directory will be set to "opt"

OR

- Using default Perl installation available in Synaptic Package Manager
- Installation of Perl 5.14.2 on Windows
  - Installing XAMPP in Windows

(XAMPP is a cumulative package consisting of Apache, PERL, PHP and MySQL. Packages is available for Windows)

- Default Webserver directory will be set to "htdocs"

2. **Variables in Perl**
   - Variables are used for storing values, like text strings, numbers or arrays
   - All variables in PERL start with a $ sign symbol
   - Declaring a variable in PERL: $var_name = value;
   - e.g:
     - $count = 1;
     - $stringVar = 'My Name is PERL';
3. **Comments in Perl**
   - Two types of comments -
     - Single Line
     - Multi Line

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- Single Line comment starts with the symbol #
- Multi Line comment used to comment a chunk of code
  - =cut =head or =begin =end
  - Start with = sign

4. **for-forcach-Loop**
   - for Loop
     - for loop is used to execute a piece of code for certain number of times
   - for-each Loop
     - for-each loop is used to iterate a condition over an array
5. **while-do-while Loops**
   - while Loop
     - while loop executes a block of code while a condition is true.
   - do-while Loop
     - do-while loop will always execute the piece of code at-least once
     - It will then check the condition and repeat the loop while the condition is true
6. **Conditional Statements**
   - if Statement
     - if statement is used to execute piece of code only if a specified condition is satisfied.
   - if-else Statement
     - if-else statement is used to execute piece of code if a condition is satisfied or another code if the condition is false.
7. **More Conditional Statements**
   - if-elsif-else statement
     - if-elsif-else conditional statement is used to check specific condition and if it is true execute the respective block else execute the default else block.
   - switch Statement
     - switch is conditional case statement. Satisfied case gets execute else the default case gets execute.
8. **Data Structures in Perl**
   - Scalar
     - These are the basic variables in PERL.
     - It can hold any kind of type viz. string, number etc.
     - eg: $variable = 9;
       $variable = 'This is string type of variable';
   - Array
     - Array in PERL is ordered collection of data.

- It can hold data of any type.
- Array index starts from zero.
- eg: @array = (1, 5, 6, 'abc', 7);

- Hash
  - Associative array or Hash in PERL is un-ordered collection of data.
  - It is a key value pair.
  - Key cannot be duplicate in hash whereas value can be.
  - eg:

    %hash = (

    'Name' => 'John',

    'Department' => 'Finance'

    );

9. **Arrays**
   - Getting Last index of array
   - Getting length of an array
     - To get the length, add 1 to last index of an array
     - Other way is use scalar function on array or assign array to a scalar variable.
   - Accessing element of an array
   - Looping over an array
     - There are two ways to loop over an array
       - Using for loop
       - Using for-each loop
10. **Array functions**
    - push
      - Add element at the end of an array
    - pop
      - Remove element from the end of an array
    - unshift
      - Add element at the start of an array
    - shift
      - Remove element of an array from the start.
    - split
      - This function splits the string and makes an array of it.
    - qw
      - qw stands for "Quoted word"
      - It returns a list of word separated by white spaces.

- sort
    - sorts the array in alphabetical order.

11. Hash in Perl

- Accessing element of a hash
- Basic hash functions
- keys
    - Returns keys of a hash
- values
    - Returns values of a hash
- each
    - Retrieve the next key/value pair from a hash
- Looping over a hash

12. Functions in Perl

- Simple function
- Function with parameters
- Function which return single value
- Function which returns multiple values

13. Blocks in Perl

- Begin
- This block executes at the compilation time once it is defined.
- Anything which needs to be included before execution of the rest of the code is written here.
- End
- This block executes at the end.
- Anything which needs to be executed at last is written here.
- UNITCHECK blocks
- CHECK blocks
- INIT blocks

Intermediate level

Topics

1. Access Modifiers in PERL

- private variable - my
- scope is in the block inside where it is declared.
- lexically scoped variables - local
- that means they get the temporary value inside the block where it is used
- global variables - our

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- can be accessed without giving package name while accessing it in another package.

2. **Referencing & Dereferencing in Perl**
    - Referencing
    - Create a reference by adding \ (backward slash)
    - Demo of various examples
    - Add, remove, access elements of array reference / hash reference in the script with examples
        - De-referencing
    - Get the actual entity being referred by reference.
    - Demo of various examples
3. **Special Variables in PERL**
    - Special variables have a predefined and special meaning in Perl.
    - These variables are denoted by usual variable indicator such as $, @, % along with punctuation characters.
4. **File Handling**
    - Open a file
    - Open a File in Read Mode
    - Open a File in Write Mode
    - Open a File in Append Mode
    - Close the FileHandle
5. **Exception and error handling in PERL.**
    - When an error occurs, exception and error handling helps to recover the program.
    - Methods used in Perl:
        - warn()
        - die()
        - eval()
6. **Including files and/or modules in a PERL program**
    - We can include the Perl modules or files by using the following methods.
    - do: It includes the source code from other files into the current script file.
    - use: It includes Perl module files only. Files get included before the actual execution of the code.
    - require: It includes both Perl programs and modules.
7. **Sample Perl Programs**
    - Includes all major topics that we covered so far in this sample program.
    - This program will give the output of various weather forecast reports of a region.

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- Weather.pm is a module that has a complex data structure to hold the data required for this program.
- weather_report.pl is the Perl program which makes use of this module file to give the required output

8. **PERL Module library (CPAN)**
    - Comprehensive Perl Archive Network (CPAN) is the library of modules.
    - User can make use of the existing modules available in CPAN
    - New modules created by the user can be uploaded to CPAN so that other Perl users can make use of it.
9. **Downloading CPAN module**
        - Linux OS:
    - There are several ways to download.
    - Type cpan and press Enter.
    - This gives us cpan prompt.
    - Type install module name.
        - Windows OS:
    - With installation of Perl on windows, a utility called PPM(Perl Package Module) gets installed.
    - Type ppm install module name.
10. **PERL & HTML**
    - To create HTML pages, Perl provides CGI module which creates CGI script with require HTML tags.
    - There are different methods which CGI modules provide to add header, adding fields to the page, retrieving the values of the parameters posted on to the form.

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Course: C

Course Code: C

Session: 2021-22

Duration: 4 months

Assessment procedures: Proctored certification Exam (100%)

Curriculum of the Course:

- 1 Introduction to C
- 2 Basic Level
- 3 Intermediate level
- 4 Advanced level

Basic Level

1) **First C Program**

- -Header Files
  - example: #include <stdio.h>
- main()
- Curly braces { }
- printf()
- semicolon ;
- Compiling a C program
  - example: gcc filename.c -o output parameter
- Executing a C program
  - example: ./output parameter
- Errors

2) **First C++ Program**

- Header files
  - --example: #include <iostream>
- main()
- Curly braces { }
- -cout<<
- semicolon ;
- Compiling a C++ program
  - example: g++ filename.cpp -o output parameter
- Executing a C program

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- example: /output parameter

3) **Tokens in C and C++**

- Data types, constants, identifiers
- Keywords
    - example: if, break, else
- Constants
- Data types
    - example: int, float, char, double
- Format specifiers
    - example: %d, %f, %c, %lf
- Range of data types
- Variables
- Identifier
- Errors

4) **Functions in C and C++**

- What is a function
- Syntax for declaration of a function
- Function with arguments
    - example: return-type function-name(parameter);
- Function without arguments
    - example: return-type function-name;
- Calling a function
- Errors

5) **Scope of Variables in C and C++**

- Introduction
- Syntax of declaring a variable
    - example: data-type var-name;
- Syntax for initializing a variable
    - example: data-type var-name = value;
- Scope of variables
- Global variable
- Local variable
- Error

6) **If And Else If statement in C and C++**

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- What are Statements.
- Syntax for if and
- If-else Statement
- Errors

7) **Nested if and switch statement in C and C++**

- Nested if statement.
- Switch statement.
- Syntax for nested-if statement
- Syntax for switch statement
- break statement
- Comparison between nested if-else and switch statement
- Errors

8) **Increment and Decrement Operators in C and C++**

- Increment Operator
  - example: ++
- Postfix increment
  - example: a++
- Prefix increment
  - example: ++a
- Decrement Operator
  - example: --
- Postfix decrement
  - example: a--
- Prefix decrement
  - example: --a
- Typecasting
- Errors

9) **Arithmetic Operators in C and C++**

- Arithmetic Operators
- Addition Operator
  - example: a + b
- Subtraction Operator
  - example: a - b
- Multiplication Operator
  - example: a * b

- Division Operator
    - example: a \ b
- Modulus Operator
    - example: a % b
- Errors

10) **Relational Operators in C and C++**

- Double Equal to
    - example: a == b
- Not Equal to
    - example: a != b
- Greater Than
    - example: a > b
- Less Than
    - example: a < b
- Greater than Equal To
    - example: a >= b
- Less Than Equal To
    - example: a <= b
- Errors

11) **Logical Operators in C and C++**

- And &&
- Or ||
- Not !
- Errors

Intermediate level

12) **Loops in C and C++**

- Loops
- Syntax for while and do-while loop
- Comparison of while and do-while loop
- Syntax for
- for loop
- Errors

13) **Arrays in C and C++**

- What are arrays

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- 1-D Arrays
- Syntax for Declaration of arrays
    - example: data type array_name [size];
- Syntax for Initialization of arrays
    - example: data type array_name [size]=value;
- Accepting values from the user
- Errors

14) **Working with 2-D Arrays in C and C++**

- What are 2-D Arrays.
- Range of arrays
- Syntax for Declaration of 2-D arrays
    - example: data type array_name[row][column];
- Syntax for initialization of 2-D arrays
    - example: data type array_name[row][column]=

```
{
{row-val},{col-val}
};
```

- Errors

15) **Strings in C and C++**

- What is a string
- Syntax for declaring a string
- Syntax for initializing a string
- To read a string from keyboard
- Errors

16) **String Library Functions in C and C++**

- What are string library functions.
- Types of string library functions
    - Strcpy
    - Strlen
    - Strcmp
    - Strcat
- Errors

Advanced level

17) **Working with Structures in C and C++**

- Introduction
- Syntax of structures

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- Declaration and initialization
- Declaration of structure variable
- Accessing structure variables

18) **Understanding Pointers in C and C++**

- Introduction
- Syntax of Pointer
    - example: int *iptr;
- Declaration
    - example:

int a; (integer a) int *aptr; (pointer to an integer *aptr) aptr = &a; (aptr set to address of a) Address Pointer

- Errors

19) **Function call in C and C++**

- types of function calls
- function pass by value
- function pass by reference

20) **File Handling in C**

- File handling functions
- Opening a File closing a file
    - example: fopen, fclose
- Reading data from a File

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Course: Campus Recruitment Training Program

Course Code: CRTCAP

Session: 2016-17

Duration: 15 Weeks

Assessment procedures: Diagnostic Test

Curriculum of the Course:

Week-1

- CT2101201 - Diagnostic Test
- No series,analogies + LAHO2101101
- oddman,coding-decoding, LAT2101101
- Numbers + QAHO2101101
- Vocab Basics (RPS approach) -1 + VAHO350655
- ERPV-1 + QAHO2101102

Week-2

- ERPV-2 - QAT2101102
- Number Systems + QAT2101101
- Vocab Basics (RPS approach) -2 VAHO320501
- CT2101102
- Blood Relations LAHO2101102
- Direction Sense

Week-3

- Symbol & Notations + LAT2101102
- Vocabulary-2 + VAHO2101101/02
- Vocabulary-3+ VAHO2101103+
- QE + QAHO2101103 +
- Progressions - QAT2101103
- Profit, percentage & Loss + QAHO2101104

Week-4

- Partnerships + QAT2101104
- Deductions +LAHO2101103
- Connectives - LAT2101103
- Vocab 2 & 3 - VAT2101101/02
- Clocks + LAHO2101104
- Calendars + LAT2101104

Week-5

- Paragraph Forming Questions + VAHO2101109
- Gram # 1 + VAHO2101104/05
- Binary Logic & Puzzles + LAT2101105

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- AMA + QAHO2101105
- SI-CI + QAT2101105
- Time & Work - 1 + QAHO2101106

Week-6

- Distribution + LAHO2101105
- Time & Work - 2 + QAT2101106
- Selection, Routes & Networks + LAHO2101106
- Comparison, Arrangement LAT2101106
- Cubes + LAHO2101107

Week-7

- Venn Diagrams + LAT2101107
- Gram # 3 + VAHO2101108
- Gram Exercise - VAT2101103/04
- Time & Distance - 1 + QAHO2101107
- Geometry + QAHO2101108

Week-8

- Gram # 1 + VAHO2101106
- Gram # 2 Part-2 + VAHO2101107
- Time & Distance - 2 + QAT2101107
- Mensuration + QAT2101108
- Non Verbal Reasoning 1 + LAHO2101108

Week-9

- Non Verbal Reasoning - 2 + LAT2101108
- P & C + QAHO2101109
- Probability + QAT2101109
- Data Interpretation -1 + QAHO2101110
- Reading Comprehension + RCHO2101101
- Data Sufficiency + QAHO210111

Week-10

- Data Interpretation exercise + QAT2101110
- Data Sufficiency exercise + QAT2101111
- Reading Comprehension Ex+ RCT2101101
- Reading Comprehension Ex + RCT2101102/03
- Logical Reasoning + LRHO2101101
- Logical Reasoning exercise LRT2101101

Week-11

- Quant & Logical Ability Practice Exercise (Infosys & Accenture Model) + PTQ2101101
- Logical Ability Practice Exercise (Infosys & Accenture model)+ PTQ2101101/02
- Logical Ability Practice Exercise + PTQ2101103

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- Quant & Logical Ability Practice Exercise (IBM & Wipro Model) + PTQ2101104
- Quant & Logical Ability Practice Exercise (IBM & Wipro Model) + PTQ2101105/06

Week-12

- CT2101103 (T.H.) (Wipro Model)
- CT2101104 (T.H.) (Wipro Model)
- Test Feedback and doubt-solving-1
- Verbal Ability Practice Exercise(Infosys & Wipro Model) + PTV2101101
- Verbal Ability Practice Exercise(Infosys & Wipro Model) PTV2101102

Week-13

- CT2101301 (T.H.) (TCS Model)
- CT2101302 (T.H.) (TCS Model)
- Quant & Logical Ability Practice Exercise (TCS model) + PTQ2101107/08
- Quant & Logical Ability Practice Exercise - CTS Model + PTQ210110910
- Verbal Ability Practice Exercise(CTS) + PTV2101103
- Test Feedback and doubt-solving-2

Week-14

- Verbal Ability Practice Exercise(Accenture Model) + PTV2101104
- Verbal Ability Practice Exercise (General Model) + PTV2101105
- Quant & Logical Ability Practice Exercise General Model + PTQ2101110
- CT2101107 (T.H.) (CTS Model)
- CT2101108 (T.H.) (CTS Model)
- CT2101303 T.H. (Tech Mahindra MODEL

Week-15

- CT2101110 (T.H.) & Accenture Model
- CT2101111 (IBM MODEL)
- CT2101112 (T.H.) General Model)
- GD Basics
- Interview Basics
- Extempore-Self introduction

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Course: Programming In C++

Session: 2020-21

Duration: 8 Weeks

Assessment procedures: Weekly Assignment (25%) + proctored certification Exam (75%)

Curriculum of the Course:

Week 1: Programming in C++ is Fun: Build and execute a C program in C++, Write equivalent programs in C++

Week 2: C++ as Better C: Procedural Extensions of C

Week 3: Overview of OOP in C++: Classes and basic Object-Oriented features (encapsulation)

Week 4: Overview of OOP in C++: More OO features, overloading, namespace and using struct and union

Week 5: Inheritance: Generalization / Specialization of Object Modelling in C++

Week 6: Polymorphism: Static and Dynamic Binding

Week 7: Type Casting & Exceptions: C++ cast operators; C++ Exceptions & standard exception classes

Week 8: Templates & STL - Function and Class templates and using STL like containers, algorithms

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Course: Cloud computing

Course Code: CC

Session: 2019-20

Duration: 8 Weeks

Assessment procedures: Weekly Assignment (25%) + proctored certification Exam (75%)

Curriculum of the Course:

Week 1:
- Introduction to Cloud Computing

Week 2:
- Cloud Computing Architecture

Week 3 :
- Service Management in Cloud Computing

Week 4 :
- Data Management in Cloud Computing

Week 5 :
- Resource Management in Cloud

Week 6 :
- Cloud Security

Week 7:
- Open Source and Commercial Clouds
- Cloud Simulator

Week 8 :
- Research trend in Cloud Computing
- Fog Computing

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Data Structures and C Programming (10-week/40 Hrs course for BTech 1st / 2nd year)

Arrays and Strings (Revision)

1. Arrays: Declaring, initializing, and accessing arrays. One-dimensional and multi-dimensional arrays.

2. Strings: Handling strings in C, string input/output, string manipulation functions.

3. Array Operations: Sorting, searching, and other common array operations.

Functions and Pointers

1. Functions: Defining and calling functions, function prototypes, recursion, passing arguments, and returning values.

2. Pointers: Understanding pointers, pointer arithmetic, pointers and arrays, pointers to functions.

3. Dynamic Memory Allocation: Allocating and deallocating memory using malloc, calloc, and free.

Linked Lists

1. Singly Linked Lists: Creating and manipulating singly linked lists.

2. Doubly Linked Lists: Implementation and operations on doubly linked lists.

3. Circular Linked Lists: Understanding circular linked lists and their applications.

Stacks and Queues

1. Stacks: Implementing stacks, stack operations, and applications.

2. Queues: Implementing queues, queue operations, and applications.

3. Deques: Introduction to double-ended queues and their usage.

Trees

1. Binary Trees: Introduction to binary trees, tree traversals, and basic tree operations.

2. Binary Search Trees: Properties, search, insertion, and deletion in binary search trees.

3. AVL Trees: Understanding balanced binary search trees and rotations.

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Graphs and Revision

1. Graph Representation: Introduction to graphs, adjacency matrices, and adjacency lists.

2. Graph Traversals: Depth-First Search (DFS) and Breadth-First Search (BFS).

3. Final Project and Revision: Students will work on a comprehensive data structure project using C programming, and there will be a revision of important topics and practice exercises.

Assessment:

1. Weekly quizzes to test understanding.

2. Programming assignments and projects to apply data structure concepts using C programming.

3. A final project that demonstrates the application of data structure knowledge.

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Web Design / UI Development (8-10 weeks/40 Hrs)

Week 1: Introduction to Web Technologies and HTML

1. Introduction to Web Design: Understanding the basic concepts of web development, internet, and browsers.

2. Introduction to HTML: Structure of an HTML document, tags, elements, and attributes.

3. Creating a Basic Web Page: Building a simple web page using HTML elements and formatting content.

Week 2: Cascading Style Sheets (CSS)

1. Introduction to CSS: Understanding the role of CSS in web design and its advantages.

2. CSS Selectors and Properties: Applying CSS styles using selectors and various CSS properties.

3. Styling Web Pages: Formatting text, colors, backgrounds, margins, and padding using CSS.

Week 3: Advanced CSS and Responsive Web Design

1. CSS Box Model: Understanding the box model and its impact on web layout.

2. CSS Layouts: Creating responsive page layouts using Flexbox and CSS Grid.

3. Media Queries: Designing responsive websites that adapt to different devices and screen sizes.

Week 4: Bootstrap Framework

1. Introduction to Bootstrap: Overview of the Bootstrap framework and its features.

2. Bootstrap Grid System: Building responsive page layouts using Bootstrap's grid system.

3. Bootstrap Components: Using pre-designed Bootstrap components like navigation bars, buttons, and forms.

Week 5: Introduction to JavaScript

1. Introduction to JavaScript: Understanding the role of JavaScript in web development.

2. Variables, Data Types, and Operators: Declaring variables, data types, and performing operations

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3. Conditional Statements and Loops: Using if-else statements, while loops, and for loops in JavaScript.

Week 6: JavaScript Functions and DOM Manipulation

1. Functions in JavaScript: Defining and using functions in JavaScript.

2. DOM Manipulation: Accessing and modifying HTML elements using JavaScript and the Document Object Model (DOM).

3. Events and Event Handling: Handling user interactions and events in JavaScript.

Week 7: jQuery Library

1. Introduction to jQuery: Understanding the purpose and advantages of using the jQuery library.

2. jQuery Selectors and DOM Manipulation: Selecting elements and manipulating the DOM using jQuery.

3. jQuery Effects and Animations: Creating interactive and dynamic effects with jQuery.

Week 8-10: Web Publishing and Project

1. Web Publishing Tools: Introducing web publishing platforms e.g., domain, and hosting services.

2. Final Project: Students will work on a complete web design and development project, incorporating HTML, CSS, Bootstrap, JavaScript, and jQuery skills learned during the course.

3. Project Presentation: Presenting and showcasing the final project to the class.

Assessment:

1. Weekly assignments and exercises to practice concepts taught.

2. A mid-term assessment to evaluate understanding up to the mid-point of the course.

3. The final project will serve as a significant portion of the overall assessment.

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Web Development with PHP- Full Stack (8-10 weeks/40 Hrs)

Week 1: Introduction to Web Development and PHP

1. Introduction to Web Development: Basics of web technologies, client-server architecture, and HTTP.

2. Introduction to PHP: History of PHP, setting up a local development environment (XAMPP, WAMP, etc.).

3. PHP Syntax and Variables: PHP tags, data types, variables, and basic output.

Week 2: Control Structures in PHP

1. Conditional Statements: Using if, else, else if statements for decision making in PHP.

2. Loops: Working with while, do-while, and for loops for iterative processes.

3. Switch Case: Implementing switch-case statements for multiple choices.

Week 3: PHP Functions and Forms

1. PHP Functions: Defining and calling functions, passing arguments, and returning values.

2. Form Handling in PHP: Creating HTML forms and processing form data using PHP.

3. Form Validation: Validating user input and displaying appropriate error messages.

Week 4: PHP and MySQL Database Integration

1. Introduction to MySQL: Basics of relational databases, SQL queries, and database management.

2. PHP-MySQL Connection: Connecting PHP with MySQL databases, executing queries, and fetching results.

3. CRUD Operations: Creating, reading, updating, and deleting data from a database using PHP and MySQL.

Week 5: PHP Sessions and Cookies

1. PHP Sessions: Working with session variables, session management, and security considerations.

2. PHP Cookies: Setting, retrieving, and deleting cookies in PHP applications.

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3. User Authentication: Implementing basic user authentication using sessions and cookies.

4. Ajax Technology

Week 6: PHP Project development

1. Designing and developing a CRUD based project in PHP

2. Making Admin panel and user interfaces

3. Advance Search functions implementations using AJAX

Week 7: Object-Oriented PHP

1. Introduction to Object-Oriented Programming (OOP) in PHP.

2. Creating Classes and Objects: Defining classes, creating objects, and accessing class members.

3. OOP Concepts: Understanding inheritance, encapsulation, polymorphism, and abstraction in PHP.

Week 8-10: Web Development Project and Advanced PHP

1. Final Project: Students will work on a complete web development project using PHP, MySQL, and HTML/CSS.

2. Advanced PHP Concepts: Covering topics like error handling, security, and best practices.

Assessment:

1. Weekly assignments and exercises to practice PHP programming.

2. A mid-term assessment to evaluate understanding up to the mid-point of the course.

3. The final project will serve as a significant portion of the overall assessment.

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Introduction to SQL and Relational Database Management Systems (8-10 weeks/ 40 Hrs)

Week 1: Introduction to Databases and SQL

1. Introduction to Databases: Understanding the importance of databases in managing data.
2. Relational Database Concepts: Tables, rows, columns, keys, and relationships.
3. Introduction to SQL: History of SQL, basic SQL commands, and its role in RDBMS.

Week 2: Retrieving Data with SQL

1. SELECT Statement: Writing SELECT queries to retrieve data from a single table.
2. Filtering Data: Using WHERE clause to filter data based on specific conditions.
3. Sorting and Limiting Results: Using ORDER BY and LIMIT clauses to organize query results.

Week 3: Joins and Subqueries

1. Inner Joins: Retrieving data from multiple tables using INNER JOIN.
2. Outer Joins: Understanding LEFT JOIN, RIGHT JOIN, and FULL JOIN.
3. Subqueries: Using subqueries in SELECT, WHERE, and HAVING clauses.

Week 4: Data Manipulation with SQL

1. Inserting Data: Using INSERT INTO to add new records to a table.
2. Updating Data: Using UPDATE to modify existing records in a table.
3. Deleting Data: Using DELETE FROM to remove data from a table.

Week 5: Data Aggregation and Grouping

1. Aggregate Functions: Using functions like COUNT, SUM, AVG, MIN, and MAX.
2. GROUP BY Clause: Grouping data based on specific columns.
3. HAVING Clause: Filtering grouped data using the HAVING clause.

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Week 6: Table Constraints and Indexes

1. Table Constraints: Understanding PRIMARY KEY, FOREIGN KEY, UNIQUE, NOT NULL, and DEFAULT constraints.

2. Indexes: Creating and using indexes to improve query performance.

Week 7: Advanced SQL Queries

1. Common Table Expressions (CTEs): Using CTEs for complex queries and recursion.

2. Window Functions: Performing calculations across rows with window functions.

3. Stored Procedures: Creating and executing stored procedures in SQL.

Week 8-10: Database Design and Project

1. Database Design: Entity-Relationship (ER) model, normalization, and database schema design.

2. Final Project: Students will work on a practical project that involves designing a database and implementing SQL queries for data manipulation and retrieval.

3. Advanced Database Concepts: Transactions, triggers, views, and security in RDBMS.

Assessment:

1. Weekly assignments and SQL queries to practice database management and SQL.

2. A mid-term assessment to evaluate understanding up to the mid-point of the course.

3. The final project will serve as a significant portion of the overall assessment.\

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