Savitribai Phule Pune University, Pune

Practical assignments to be conducted in AY 2020-21

Class: FYBSc(CS) **Sub: Computer Science Lab Course**

(To be implemented as per Lab Book)

S N	Name of Assignment
SEM I	**Section I - C Programming**
1	Use of data types, simple operators (expressions)
2	Use of decision making statements (if and if-else, nested structures)
3	Use of simple loops
4	Use of nested loops
5	Use of user defined functions)
6	Use of recursive functions.
7	Use of arrays (1-d arrays) and functions
SEM I	**Section II- RDBMS**
1	Data Definition queries (Create)
2	Data Definition queries (Alter , Drop)
3	Simple queries (Select)
4	Queries with join
5	Aggregate queries (Group by and Having)
6	Nested Queries
7	Data Manipulation queries (Insert, Delete, Update)

SEM II	Section I – Advanced C Programming
1	Use of Simple Pointers
2	Dynamic Memory Allocation
3	String Handling Using User defined Functions.
4	Structure and Unions.
SEM II	**Section II- RDBMS**
1	Stored Procedure
2	Stored Function
3	Cursors

Savitribai Phule Pune University, Pune

Practical assignments to be conducted in AY 2020-21

Class: SYBSc(CS) **Sub: Computer Science Lab Course**

(To be implemented as per Lab Book)

S N	**Name of Assignment**
SEM I	**Data Structure - I**
S N	Name of Assignment
1	Searching Algorithms
2	Sorting Algorithms - I
3	Singly Linked List
4	Stack
5	Applications of Stack
6	Linear Queue and Circular Queue
SEM II	**Data Structure - II**
1	Binary Search Tree and Traversals
2	Binary Tree Applications.
3	Graph as Adjacency Matrix
4	Graph as Adjacency List

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Practical assignments to be conducted in AY 2020-21

Class: TYBSc(CS) Sub: CS-347 LAB COURSE I

(To be implemented as per Lab Book)

S N	Name of Assignment
SEM I	**Based on CS-331(SYSTEM PROGRAMMING)**
1	Line Editor
2	SMAC0 Simulator
3	Assembler
SEM II	**Based on CS-341 (OPERATING SYSTEMS)**
1	Extended Shell(Toy Shell)
2	CPU Scheduling
3	Banker's Algorithm

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Practical assignments to be conducted in AY 2020-21

Class: TYBSc(CS) Sub: CS-348 LAB COURSE II

(To be implemented as per Lab Book)

S N	Name of Assignment
SEM I	**Based on CS-334 (JAVA PROGRAMMING I)**
1	Array of Objects and Packages
2	Inheritance and Interfaces
3	Exception Handling
4	GUI Designing, Event Handling and Applets
SEM II	**Based on CS-344 334 (JAVA PROGRAMMING II)**
1	Collections
2	Database Programming
3	Servlets
4	Multithreading

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Practical assignments to be conducted in AY 2020-21

Class: TYBSc(CS) Sub: CS-349 LAB COURSE III

(To be implemented as per Lab Book)

S N	Name of Assignment
SEM I	**Based on CS-335 (INTERNET PROGRAMMING)**
1	To study functions & strings
2	To study Arrays
3	To study Files and Directories
SEM II	**Based on CS-345 (INTERNET PROGRAMMING)**
1	Form designing (HTML & CSS) and cookies & sessions
2	XML
3	Javascript

Guidelines for Practical Conduction and Evaluation for Academic year 2020-21
M.Sc. (Computer Science)
Savitribai Phule Pune University

List of Practical Assignments to be Conducted

SEMESTER I

Choice Based Optional Papers

CSDP114A Cloud Computing Practical Assignments

1. Working and Implementation of Infrastructure as a service.
2. Working and Implementation of Software as a service.
3. Working and Implementation of Platform as a service.
4. Practical Implementation of Storage as a Service.
5. Working of Google drive to make spreadsheets and notes.
6. Working and Implementation of identity management.
7. Execute the step to Demonstrate and implementation of cloud on single sign on.
8. Installing and Developing Application Using Google App Engine.
9. Installation and configuration of cloud Hadoop and demonstrate simple query.

CSDP114B Artificial Intelligence Practical Assignments

1. Write a Python Program to,
   (a) Print Multiplication Table of a Number.
   (b) Check if given number is prime or not
   (c) Find factorial of the given no.
2. Write a Python program to implement List Operations (Nested list, Length, Concatenation, Membership, Iteration, Indexing and Slicing), List Methods (Add, Append, Extend & Delete)
3. Write a Python program to Illustrate Different Set Operations.
4. Write a Python program to implement Breadth First Search Traversal.
5. Write a Python program to implement Water Jug Problem.
6. Write a Python program to implement Regression algorithm.

CSDP114C Web Services Practical Assignments

1. Create Dynamic Web Project, which will host your web service functionality to greet the user according to time and create a Dynamic Web Project, which will host the client application that will send user name and test the web service.
2. Create Dynamic Web Project, which will host your web service functionality to convert Celsius to Fahrenheit and create Dynamic Web Project, which will host the client application that will send the temperature in Celsius and test the web service.

3. Create Dynamic Web Project, which will host your web service functionality to find the factorial of given number and create Dynamic Web Project, which will host the client application that will send positive integer number and test the web service.
4. Create Dynamic Web Project, which will host your web service functionality to validate mobile number (use regular expression: should contain only 10 numeric no) and create Dynamic Web Project, which will host the client application that will send mobile no and test the web service.
5. Create Dynamic Web Project, which will host your web service functionality to convert Rupees to Dollar, Pound, Euro and create Dynamic Web Project, which will host the client application that will send amount in Rupees and test the web service.
6. Create Dynamic Web Project, which will host your web service functionality to convert decimal number to Binary, Octal, Hexadecimal and create Dynamic Web Project, which will host the client application that will send decimal number and test the web service.
7. Create Dynamic Web Project, which will host your web service functionality to find number of vowels in the given string and create Dynamic Web Project, which will host the client application that test the web service.
8. Create Dynamic Web Project, which will host your web service functionality to find area and volume of the circle and create Dynamic Web Project, which will host the client application that will send radius and test the web service.

Core Compulsory Practical Paper

CSUP115 PPL and Database Technologies Practical Assignments

MongoDB Practical Assignment No. 1

1. Create a database with the name 'Movie'.
2. A 'Film' is a collection of documents with the following fields:
    a. Film Id
    b. Title of the film
    c. Year of release
    d. Genre / Category (like adventure, action, sci-fi, romantic etc.) A film can belong to more than one genre.
    e. Actors (First name and Last name)
    A film can have more than one actor.
    f. Director (First name and Last name)
    A film can have more than one director.
    g. Release details (It consists of places of release, dates of release and rating of the film.)
3. An 'Actor' is a collection of documents with the following fields:
    a. Actor Id
    b. First name
    c. Last Name
    d. Address (Street, City, State, Country, Pin-code)
    e. Contact Details (Email Id and Phone No)
    f. Age of an actor.

Queries:

1. Insert at least 10 documents in the collection Film –
   a. Insert at least one document with film belonging to two genres.
   b. Insert at least one document with film that is released at more than one place and on two different dates.
   c. Insert at least three documents with the films released in the same year.
   d. Insert at least two documents with the films directed by one director.
   e. Insert at least two documents with films those are acted by a pair 'Madhuri Dixit' and 'Shahrukh Khan'.
2. Insert at least 10 documents in the collection Actor.
   Make sure, you are inserting the names of actors who have acted in films, given in the 'Film' collection.
3. Display all the documents inserted in both the collections.
4. Add a value to the rating of the film whose title starts with 'T'.
5. Add an actor named "_____" in the 'Actor' collection. Also add the details of the film in 'Film' collection in which this actor has acted in.
6. Delete the film "_____".
7. Delete an actor named "_____".
8. Delete all actors from an 'Actor' collection who have age greater than "____"
9. Update the actor's address where Actor Id is "_____". 10.

Update the genre of the film directed by "_____".

MongoDB Practical Assignment No. 2

This assignment is based on 'Movie' database having collections 'Film' and 'Actor'.

Prerequisite: Read MongoDB Aggregate framework before executing the following assignments.

Note: It is expected that student should fill in the data relevant to the queries given in the assignment. The result set should not be empty.

1. Find the titles of all the films starting with the letter 'R' released during the year 2009 and 2011.
2. Find the list of films acted by an actor "_____".
3. Find all the films released in 90s.
4. Find all films belonging to "Adventure" and "Thriller" genre.
5. Find all the films having 'A' rating.
6. Arrange the film names in ascending order and release year should be in descending order.
7. Sort the actors in ascending order according to their age.
8. Find movies that are comedies or dramas and are released after 2013.
9. Show the latest 2 films acted by an actor "_____".
10. List the titles of films acted by actors "_____" and "_____".
11. Retrieve films with an actor living in Spain.
12. Retrieve films with actor details.

Neo4j Practical Assignment No. 1

Create the following databases as graph models. Visualize the models after creation, return properties of nodes, Return the nodes labels, Return the relationships with its properties.
NB: You may assume and add more labels, relationships, properties to the graphs.

1. Consider a Song database, with labels as Artists, Song, Recording_company, Recoding_studio, song author etc.
Relationships can be as follows
Artist → [Performs] → Song →[Written by] → Song_author.
Song → [Recorded in] → Recording Studio →[managed by] → recording Company Recording Company → [Finances] → Song
You may add more labels and relationship and their properties, as per assumptions.

2. Consider an Employee database, with a minimal set of labels as follows
Employee: denotes a person as an employee of the organization Department: denotes the different departments, in which employees work. Skillset: A list of skills acquired by an employee

Projects: A list of projects in which an employee works.
A minimal set of relationships can be as follows:
Works_in : employee works in a department
Has_acquired: employee has acquired a skill
Assigned_to : employee assigned to a project
Controlled_by: A project is controlled by a department
Project_manager: Employee is a project_manager of a Project

Neo4j Practical Assignment No. 2

1. Song Database:
   a) List the names of songs written by ":.."
   b) List the names of record companies who have financed for the song "…."
   c) List the names of artist performing the song "…."
   d) Name the songs recorded by the studio "……."
2. Employee Database:
   a) List the names of employees in department "… ....."
   b) List the projects along with their properties, controlled by department "……"
   c) List the departments along with the count of employees in it
   d) List the skillset for an employee "… ....."

Paradigm of Programming Language SCALA PROGRAMS

- Assignments based on Control Structures --

1. Write a program to calculate factorial of a number.
2. Write a program to find second maximum number of four given numbers.
3. Write a program to calculate average of all prime numbers between n1 and n2 (eg.100 to 300 read values of n1 and n2 from user)

- Assignments based on Arrays ---

1. Write a program to find maximum and minimum of an array.
2. Write a program to calculate transpose of a matrix.
3. Write a program to check if the matrix is upper triangular or not.

- **Assignments based on String ----**

1. Write a program to read a character from user and count the number of occurrences of that character.

2. Write a program to count uppercase letters in a string and convert it to lowercase and display the new string.

- **Assignments based on Classes and Objects ----**

1. Define a class CurrentAccount (accNo, name, balance, minBalance). Define appropriate constructors and operations withdraw (), deposit(), viewBalance(). Create an object and perform operations.
2. Create abstract class Shape with abstract functions volume() and display(). Extend two classes Cube and Cylinder from it. Calculate volume of each and display it.
3. Define a class Sports (id, name, description, amount). Derive two classes Indoor and Outdoor. define appropriate constructors and operations. Create an object and perform operations.

- **Assignments based on List ----**

1. Create a list of integers divisible by 3 from List containing numbers from 1 to 50.
2. Create Lists using five different methods (Lisp style , Java style, fill, range and tabulate methods).

- **Assignments based on MAP & Set**

1. Write a program to create MAP with Rollno and FirstName. Print all student information with same FirstName.
2. Write a program to display largest and smallest element of the Set.

SEMESTER II

Choice Based Optional Paper

CSDT124A Project

Guidelines:

- Students should work in a team of minimum 2 and maximum 3 students.
- Students can choose a project topic without any restriction on technology or domain.
- The student group will work independently throughout the project work including: problem identification, information searching, literature study, design and analysis, implementation, testing, and the final reporting.
- Project guide must conduct online project presentations (minimum 2) to monitor the progress of the project groups.
- At the end of the project, the group should prepare a report which should conform to international academic standards. The report should follow the style in academic journals and books, with clear elements such as: abstract, background, aim, design and implementation, testing, conclusion and full references, Tables and figures should be numbered and referenced to in the report.
- The final online project presentation with demonstration (UE) will be evaluated by the project guide (appointed by the college) and one external examiner (appointed by the Principal).

Online Evaluation guidelines:

IA (15 marks)			**UE (35 marks)**		
First Presentation	Second Presentation	Documentation	Project Logic/Presentation	Documentation	Viva
5	5	5	20	5	10

Recommended Documentation Contents:

Abstract

Introduction

-motivation
-problem statement
-purpose/objective and goals
-literature survey
-project scope and limitations

System analysis

-Existing systems
- scope and limitations of existing systems
-project perspective, features
- stakeholders
-Requirement analysis - Functional requirements, performance requirements, security requirements etc.

System Design

- Design constraints
- System Model: UML diagrams
- Data Model
-User interfaces

Implementation details

-Software/hardware specifications

Outputs and Reports

Testing

Test Plan, Black Box Testing or Data Validation Test Cases, White Box Testing or Functional Validation Test cases and results

Conclusion and Recommendations

Future Scope

Bibliography and References

CSDP124A Project-related Assignments

Guidelines:

- The project assignments are a compulsory part of the project course and should be carried out by each project group.
- Project assignments are to be given by the guide for continuous internal evaluation.
- The project assignments are to be allotted to each group separately by the project guide on the basis of the implementation technology. A suggested list of assignments is given below.
  1. Project Time management: plan (schedule table), Gantt chart, Roles and responsibilities, data collection, Implementation
  2. Simple assignments to evaluate choice of technology
  3. Assignments on UI elements in chosen technology
  4. Assignments on User interfaces in the project
  5. Assignments on event handling in chosen technology
  6. Assignments on Data handling in chosen technology
  7. Online and offline connectivity
  8. Report generation
  9. Deployment considerations
  10. Test cases
- Each student within the group must work actively and contribute to the assignments, project work and report writing.

Online Evaluation guidelines:

IA (15 marks)		**UE (35 marks)**	
Attendance	Assignments	Assignments	Viva
5	10	25	10

CSDP124B Human-Computer Interaction Practical Assignments

1. Understand the trouble of interacting with Computers - Redesign interfaces of applications. Select any application, like land-line phone application, registration etc and understand the trouble of interacting with that application. Comment on design of that application as good or bad design based on whether interaction principles are matching with users mental model or not. Redesign the interface for mention the change in design and reason.
2. Know your client: Select anyone category of user and develop application understanding the user who will be using your system. Comment on the category of user selected and specific features given for the users and identify what kinds of interfaces will they like and why?. Compare with existing system analyze and rate them.Analyze user models and develop user centric interfaces for :
    a. Rural people: ATVM for train ticketing in rural area Perform analysis of rural people e.g. their problems, interests, needs, language etc
    b. Mentally disabled: Design the interface of a game for mentally disabled children. Analysis of mentally disabled e.g. their behavior, problems, interests.
3. Identify 5 different websites catering to one specific goal (eg. Goal – on-line shopping and 5 different websites – ebay, amazon, flipkart, zovi, myntra) and perform a competitive analysis on them to understand how each one caters to the goal, the interactions and flow of the payment system and prepare a report on the same. Consider any 8 HCI principles and prepare the following table evaluating the websites
4. Design an application which consists of different types of menus such as Menu bar, PullDown Menu, Cascading Menu, Pop-up Menus,Tear-off Menus. Apply and explain general menu design guidelines applied for formatting, ordering, phrasing, selecting choices, and navigating menus for application which is designed.
5. Implement different Kinds of Windows such as message boxes, palette Windows, Pop-up Windows, primary window, secondary window, dialog boxes, message box etc. For every window designed for the application explain: - Purpose - Description - Components - Kind window

   Any tool or technology can be used for implementation e.g., VB, DOTNET, JAVA, PHP, etc.

CSDP124C Soft Computing Practical Assignments (C/C++/Java/MATLAB)

1. Write a program to implement Fuzzy Operations
    a. Union
    b. Intersection
    c. Complement
    d. Algebraic sum
    e. Algebraic product
    f. Cartesian product
2. Write a program to implement De Morgans law.
3. Write a program to implement Max-Min Composition and Max-Product Composition.
4. Write a program to implement lambda cut
5. Write a program to implement Activation Function.
6. Write a program to implement Perceptron Learning Rule

Core Compulsory Practical Paper CSUP125 Practical on Advanced OS & Mobile Technologies

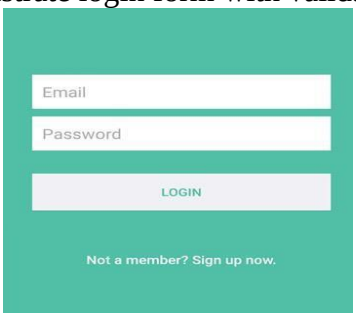
Advanced OS Assignments

Write a following program in 'C '

1. To create 'n' children. When the children will terminate, display total cumulative time children spent in user and kernel mode.
2. To generate parent process to write unnamed pipe and will read from it.
3. To create a file with hole in it.
4. Write a C Program that demonstrates redirection of standard output to a file.
5. To handle the two-way communication between parent and child using pipe.
6. To demonstrate the use of atexit () function.
7. Open a file goes to sleep for 15 seconds before terminating.
8. To print the size of the file.
9. Read the current directory and display the name of the files, no of files in current directory.
10. Write a C program to display all the files from current directory which are created in particular month.
11. Write a C program to implement the following unix/linux command i. ls –l > output.txt.
12. Write a C program which display the information of a given file similar to given by the unix / linux command ls –l <file name>
13. Write a C program that behaves like a shell (command interpreter). It has its own prompt say "NewShell$". Any normal shell command is executed from your shell by starting a child process to execute the system program corresponding to the command. It should additionally interpret the following command. i) count c <filename> - print number of characters in file ii) count w <filename> - print number of words in file iii) count l <filename> - print number of lines in file
14. Write a C program which receives file names as command line arguments and display those filenames in ascending order according to their sizes. i) (e.g., $ a.out a.txt b.txt c.txt, …)

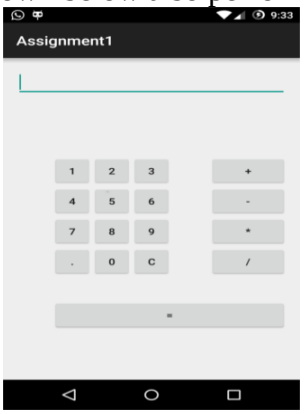
Mobile Technologies Assignments

1. Java Android Program to demonstrate login form with validation.

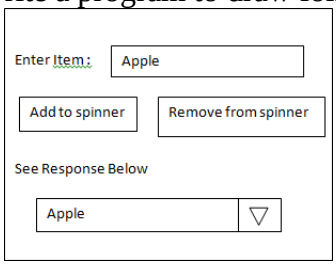


2. Java Android Program to demonstrate Registration form with validation.
3. Create a Simple Application Which Shows Life Cycle of Activity.
4. Create a Simple Application Which Send ―Hello‖ message from one activity to another with help of Button (Use Intent).
5. Create an application that will change color of the screen and change the font size of text view using xml.

6. Create an application that allows the user to enter a number in the textbox named ‘getnum’. Check whether the number in the textbox ‘getnum’ is palindrome or not. Print the message accordingly in the label control named lbldisplay when the user clicks on the button ‘check’.
7. Create the simple calculator shown below also perform appropriate operation



8. By using Spinner, Buttons. Write a program to draw following GUI.



9. Construct image switcher using setFactory().
10. Construct a bank app to display different menu like windrow, deposite etc.
11. Java Android Program to Demonstrate Alert Dialog Box
12. Java Android Program to Demonstrate List View Activity with all operations (Insert, delete, Search).
13. Create table Customer (id, name, address, phno).
    Create Application for Performing the following operation on the table. (using sqlite database)
    i) Insert New Customer Details.
    ii) Show All the Customer Details
14. Write a program to perform Zoom In, Zoom Out operation and display Satellite view, Terrain view of current location on Google Map.

SEMESTER III

Choice Based Optional Paper

CSDP234A Big Data Practical Assignments

It is expected to form teams and ask students to solve these case studies discuss and work on solutions for these case studies.

1. Refer Book No 6 for solving case studies.
   (Big Data Case Study by Bernard Marr –Willey Publications.)

Note: Any case study can be explained by students
(just to check their knowledge how data sets can be formed and how we can retrieve data. They should be able to understand the use of Big Data and Normal Database)

Note : Colleges Can Perform any Five out of Following

1. Assignment 1: Case study on Facebook
2. Assignment 2: Case Study on IoT Sensors
3. Assignment 3: Case Study on Telecom Industry
4. Assignment 4: Case Study on Banking
5. Assignment 5: Case study on Amazon
6. Assignment 6: Case Study on General Electric –By TCS
7. Assignment 7: Case Study on Uber
8. Assignment 8: Case Study on Netflix
9. Assignment 9: CDC (Corona Virus and other Pandemics

Note: Slips should be designed on the basis of following topics at college level. The practicals should be taken on the basis of above case studies.

CSDP234B Web Analytics Practical Assignments

1. **Mining Twitter:** Exploring Trending Topics, Discovering What People Are Talking About, and More Why Is Twitter All the Rage?, Exploring Twitter's API, Fundamental Twitter Terminology, Creating a Twitter API Connection, Exploring Trending Topics, Searching for Tweets, Analyzing the 140 Character, Extracting Tweet Entities, Analyzing Tweets and Tweet Entities with Frequency Analysis, Computing the Lexical Diversity of Tweets, Examining Patterns in Retweets, Visualizing Frequency Data with Histograms
2. **Visitors' loyalty:** Analyze the person who visit site again and again is loyal to company because they can become customer
3. **Text Analytics:** Interpreting Twitter Data From college students Tweets. Extracting Tweet Entities, Analysing Tweets and Tweet Entities with Frequency Analysis, Computing the Lexical Diversity of Tweets, Examining Patterns in Retweets, Visualizing Frequency Data with Histograms
4. **Mining Facebook:** Analysing Fan Pages, Examining Friendships, and More Overview, Exploring Facebook's Social Graph API, Understanding the Social Graph API, Understanding the Open Graph Protocol, Analyzing Social Graph Connections, Analyzing Facebook Pages, Examining Friendships

5. **Mobile Analytics:** Analyze your site on mobile device in last 30 days, how many new users come from mobile, what was the bounce rate of visitors on mobile device, what was the average session duration?

CSDT234C Project

Guidelines:

- Students should work in a team of minimum 2 and maximum 3 students.
- Students can choose a project topic without any restriction on technology or domain.
- The student group will work independently throughout the project work including: problem identification, information searching, literature study, design and analysis, implementation, testing, and the final reporting.
- Project guide must conduct online project presentations (minimum 2) to monitor the progress of the project groups.
- At the end of the project, the group should prepare a report which should conform to international academic standards. The report should follow the style in academic journals and books, with clear elements such as: abstract, background, aim, design and implementation, testing, conclusion and full references, Tables and figures should be numbered and referenced to in the report.
- The final online project presentation with demonstration (UE) will be evaluated by the project guide (appointed by the college) and one external examiner (appointed by the Principal).

Online Evaluation guidelines:

IA (15 marks)			**UE (35 marks)**		
First Presentation	Second presentation	Documentation	Project Logic/Presentation	Documentation	Viva
5	5	5	20	5	10

Recommended Documentation

Contents: Abstract

Introduction

-motivation
-problem statement
-purpose/objective and goals
-literature survey
-project scope and limitations

System analysis

-Existing systems
- scope and limitations of existing systems
-project perspective, features
- stakeholders
-Requirement analysis - Functional requirements, performance requirements, security requirements etc.

System Design

- Design constraints
- System Model: UML diagrams
- Data Model

-User interfaces

Implementation details

-Software/hardware specifications

Outputs and Reports

Testing

Test Plan, Black Box Testing or Data Validation Test Cases, White Box Testing or Functional Validation Test cases and results

Conclusion and Recommendations

Future Scope

Bibliography and References

CSDP234C: Project Related Assignments

Guidelines:

- The project assignments are a compulsory part of the project course and should be carried out by each project group.
- Project assignments are to be given by the guide for continuous internal evaluation.
- The project assignments are to be allotted to each group separately by the project guide on the basis of the implementation technology. A suggested list of assignments is given below.
  1. Project Time management: plan (schedule table), Gantt chart, Roles and responsibilities, data collection, Implementation
  2. Simple assignments to evaluate choice of technology
  3. Assignments on UI elements in chosen technology
  4. Assignments on User interfaces in the project
  5. Assignments on event handling in chosen technology
  6. Assignments on Data handling in chosen technology
  7. Online and offline connectivity
  8. Report generation
  9. Deployment considerations
  10. Test cases
- Each student within the group must work actively and contribute to the assignments, project work and report writing.

Online Evaluation guidelines:

IA (15 marks)		**UE (35 marks)**	
Attendance	Assignments	Assignments	Viva
5	10	25	10

Core Compulsory CSUP235 Practical on Software Architecture and Design Pattern and Machine Learning

Software Architecture and Design Pattern

1. Write a Java Program to implement Factory method for Pizza Store with createPizza(), orederPizza(), prepare(), Bake(), cut(), box(). Use this to create variety of pizza's like NyStyleCheesePizza, ChicagoStyleCheesePizza etc.

2. Write a Java Program to implement Singleton pattern for multithreading.
3. Write a Java Program to implement Adapter pattern for Enumeration iterator.
4. Write a Java Program to implement I/O Decorator for converting uppercase letters to lower case letters.
5. Write a JAVA Program to implement built-in support (java.util.Observable) Weather station with members temperature, humidity, pressure and methods mesurmentsChanged(), setMesurment(), getTemperature(), getHumidity(), getPressure()
6. Write a Java Program to implement Iterator Pattern for Designing Menu like Breakfast, Lunch or Dinner Menu.
7. Write a Java Program to implement undo command to test Ceiling fan.

Machine Learning (Python)

1. Write a python program to Prepare Scatter Plot (Use Forge Dataset / Iris Dataset)
2. Write a python program to find all null values in a given data set and remove them.
3. Write a python program the Categorical values in numeric format for a given dataset.
4. Write a python program to implement simple Linear Regression for predicting house price.
5. Write a python program to implement multiple Linear Regression for a given dataset.
6. Write a python program to Implement Decision Tree whether or not to play tennis.
7. Write a python program to implement k-nearest Neighbors ML algorithm to build prediction model (Use Forge Dataset)
8. Write a python program to implement k-means algorithm on a synthetic dataset.

SEMESTER IV
CSUIT241 Industrial Training /Institutional project

The Industrial Training /Institutional project is equivalent to 5 theory courses of 4 credits each. Marks per 4 credits = 100. The total weightage for Industrial/Institutional training is 500 marks.

Guidelines:

- Each student must individually complete **minimum 5 months** full time Industrial training / Institutional project in the 4th semester.
- College should assign a student mentor to every student. The mentor will online monitor the progress of the student throughout the semester for continuous assessment.
- Student should submit a valid offer letter and synopsis within two weeks of starting the internship.
- There will be continuous assessment of the work done by the student during the internship period.
- Continuous assessment guidelines:
  1. Student should submit a weekly report in the college to the mentor by email.
  2. The report should contain the following details: Name of student, project title, company name, company mentor, daily activities and results/output, proposed work for next week.
  3. The weekly report should be duly signed by the student and approved by company mentor/ institute guide (CM).
  4. Student Mentor should maintain weekly attendance record for every student.
  5. Two online presentations should be conducted for each student (first presentation after first month and second presentation after 3rd month)
  6. Student Mentor should take feedback from the Company mentor regarding overall performance of the student.
- At the end of the internship period, each student should prepare a report which should conform to international academic standards.
- The report should follow the style in academic journals and books, with contents such as: abstract, background, aim, design and implementation, testing, conclusion and full references, Tables and figures should be numbered and referenced to in the report.

Examination and Evaluation guidelines

- The project done during internship period will be evaluated online in the following manner:
  IA - 150 marks + UE-350 marks.
- The final **Online** presentation and documentation will be evaluated by three examiners:
  1. Student mentor (appointed by respective college)
  2. External examiner (appointed by the College Principal)
  3. IT expert (appointed by respective college)

IA (150 marks)				
Weekly Attendance	Weekly Reports	First Presentation	Second Presentation	Documentation
20	40	20	40	30

UE (350 marks)		
Mentor	IT Expert	External Examiner
100	125	125

Recommended Documentation contents:

Title page
Company / Institute certificate Internship
completion certificate **Abstract**
Introduction
-motivation
-problem statement
-purpose/objective and goals
-literature survey
-project scope and limitations
System analysis
-Comparative study of Existing systems
- scope and limitations of existing systems
-project perspective, features
- stakeholders
-Requirement analysis - Functional requirements, performance requirements, security requirements etc.
System Design
- Design constraints
- System Model: UML diagrams
- Data Model
-User interfaces
Implementation details
-Software/hardware specifications, etc.
Reports
Testing
Test Plan, Black Box Testing or Data Validation Test Cases, White Box Testing or Functional Validation Test cases and results
Conclusion and Recommendations
Future Scope
Bibliography and References