

MES's Pillai College of Engineering, New Panvel

**A REPORT ON
PROJECT BASED LEARNING (PBL)**

**Academic Year 2017-2018 (Semester III)
Second Year Undergraduate Students of**

Computer Engineering Department

Objective—To enable the students to apply concepts of the present semester subjects (including those of previous semesters) in the form of a design project based on certain application. It is hoped that it shall eventually lead to a better learning experience as opposed to textbook learning. Separate topics are assigned to all students in groups (maximum 4-6 students per group) of the same year to enable healthy competition among the different teams. The students work in groups and assign and distribute various aspects of work so as to realize the project based on a timeline of about 2 to 3 months. Queries and doubts are clarified by interactions with the PBL coordinators and subject experts. Student groups submit the PBL report during their demonstrations on a specified date in front of the faculty members.

Judges for the PBL Demonstrations

All Computer and IT Engineering Faculty of the concerned class.

PBL Coordinators

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| Division A | Prof. Ranjita G |
| Division B | Prof. Sagar K |

PBL Topics:

| OOPM TOPIC | | |
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| # | Topic | Description |
| 1 | Find Best student of the year | To find best student of the college based on academics, cultural, sports, social, code of conduct, and many more parameters which can help out to know who is the best student of the year Project should be implemented in Java where data of students needs to be collected with all the required parameters to judge the best student. Certain rules needs to be establish to sort and find out who will be the best student from the list of students. Data to be stored in an Access database. |
| 2 | Result Analysis of Students | Develop a GUI application in Java to prepare the marks of 'N' students for six subject list (DS, DLDA, Maths, OOPM, DST, ECCF) with following requirements. Get the name of the student and marks for six subjects. Calculate the total marks of the students. Display the name,marks. Sort the marks according to the total and display the result. Display the subject toppers. Display the overall topper in these students. Topper is one who has the highest total marks. Display the number of passed and failed students. You should handle exceptions like NotMarksException if user enters non-integer data while program is accepting marks and MarksOutOfRangeExpection if user enters marks more than 100 or less than 0 respectively. These exceptions can be handled by displaying an appropriate error messages on the screen (Validation of input). |
| 3 | A simple calculator GUI Application | Simple Calculator GUI with Addition, Subtraction, Multiplication, Division and Modulus Operations using Applets, Events and Event handling in JAVA and ActionListener Interface |
| 4 | Develop a simple GUI based MS Access database driven application for a Bank system. | Develop a GUI application in Java for Bank Management System to deal with 'N' customers of a Bank with following requirements. Get the Customer ID, Account No, Name, balance. Display the contents of the file. Search a customer from his name and customer ID and display its details. Take input the transaction type Withdrawing or Depositing (W or D) money in the bank. Accordingly perform operations on data and display the account balance. Display the customer details who have account balance less than the minimum limit Rs. 1000. You should handle exceptions like ZeroBalanceException when an account is containing balance Zero and InsufficientBalanceException if user tries to perform |

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| | | a withdrawal and insufficient balance is there in the account. These exceptions can be handled by displaying an appropriate error messages on the screen (Validation of input). |
| 5 | Employee Leave Management System for college office | The Leave Management System will allow the faculty of college to apply leave through their system. Faculty will be able to see their current leave balance and will have the option of applying leave. Once the faculty applies for leave ,then his/her leave balance will be deducted. HOD of department will be able to see the details of faculty who are on leave today. Project should be implemented in JAVA here faculty window will allow faculty to apply for leave and check leave balance and data will be maintained in database. The HOD window will allow the HOD to check list of faculty who are on leave on the given day. |
| 6 | Tic Tac Toe Gaming Application in Java | Develop a GUI application to create a Java program that can play a game of Tic-Tac-Toe with the user. Tic-Tac-Toe is a simple game usually played with paper and pencil. First, you make a simple 3 x 3 grid on the paper. Then two players alternate turns by marking Xs and Os in empty spaces on the grid. The first player who makes three of his or her marks in a horizontal, vertical, or diagonal row wins. If all of the spaces in the grid are filled before any player marks three in a row, the game is a draw. Here are the rules and instructions for this challenge: 1. The computer plays against the human. The human moves first and is X. The computer is O. 2. The program should begin by displaying a short welcome message, and then should prompt the player for his or her first move. 3. Use X to mark the human's plays and O to mark the computer's plays. 4. Play continues until one player has scored three in a row or all squares have been filled with no winner. Your program must be able to determine whether either player has scored three in a row and won the game. 5. The human and computer players can play in only those squares that are not already occupied by either player. 6. The program ends when the game is won by either player or the game is a draw. If you want to play again, you must run the program again. |
| 7 | Write a program to implement Java Applet to display Analog Clock | Develop a GUI application to display current time in a Java Applet. Current time has to be fetched by using Utility classes in Java. |
| 8 | Invoice generation with GST impact | Generating invoice for the purchased products which will provide information to users about before GST and current GST based tax applied on the product. This will help the user to compare the price changed and impact of GST on the given |

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| | | product. Project should be implemented in JAVA where user when add the products description will be able to see the complete invoice of the purchased project with visualization of comparison between past and present tax impact on product. Rules needs to be generated to calculate tax and products details needs to be stored in the database for invoice generation. |
| 9 | Develop A Simple Text editor | Write a Awt application to develop a Text editor in Java . It should implement following functions as menu options or functionality of Text editor. New Open Save Save As Page Setup Print Exit Delete Cut Copy Paste Find Next Replace Go To Select All |
| 10 | I-CARD GENERATOR SYSTEM for Alegria | Write a Awt application to develop an Event ID card for the college festival for the registered participants. This will see that no one gets more than one ID card. The details of the event and participants should be stored in MS-Access database and generate I card by using AWT and Java Applet. |

| Data Structure Topics | |
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| # | Topic |
| 1 | Check syntax of program in terms of well formedness of parenthesis using STACK |
| 2 | Implement CPU scheduling technique using priority queue |
| 3 | Implement Hashing with linear probing as collision resolution technique |
| 4 | Implement Hashing with Quadratic probing as collision resolution technique |
| 5 | Implement Hashing with double hashing as collision resolution technique |
| 6 | Polynomial operations using SLL |
| 7 | Rational number operations using SLL |
| 8 | UNDO functionality in WORD using DLL |
| 9 | travelling salesperson problem using Graph |
| 10 | Expression tree construction |
| 11 | Message encoding using Huffman's algorithm |

Winners list:

| Sr. No. | List of Topics & Students |
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| 1 | Topic : SLL in C & Text Editor in Java |
| | Vinod Gupta |
| | Balraj Singh |
| | Saqiuzzaman Hossain |
| | Parag Iyyani |
| | |
| 2 | Topic : I-Card Generator System for College Festival Alegria |
| | Saqlain Dhase |
| | Pravinraj Nadar |
| | Dhanadharsh C. |
| | Tanmay Maurya |
| | |
| 3 | Topic : Message Encoding & Tic-Tac-Toe Application |
| | Sagar Kuvar |
| | Salman Mapkar |
| | Sitadevi M. |
| | Vinayak Khithani |
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| 4 | Topic : Hashing & Employee Leaves Management System |
| | Kavya Mohandas |
| | Urjita Kerkar |
| | Shruti Katkade |
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| 5 | Topic : GUI Based Calculator |
| | Nimit Tiwari |

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| | Khan Abdul Basit Nasir |
| | Jishnu Unnikrishnan |
| | Vaibhav Adsul |

Photos:

