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| Sr.No |  | Title of the Experiment | DATE |
| **Part I: Systems Programming and Operating System** | | | |
| **Group A (Any Two Assignments from Sr. No. 1 to 3)** | | | |
| 1 | A1 | Design suitable Data structures and implement Pass-I and Pass-II of a two-pass assembler for  pseudo-machine. Implementation should consist of a few instructions from each category and  few assembler directives. The output of Pass-I (intermediate code file and symbol table)  should be input for Pass-II. |  |
| 2 | A2 | Design suitable data structures and implement Pass-I and Pass-II of a two-pass macro-processor. The output of Pass-I (MNT, MDT and intermediate code file without any macro definitions) should be input for Pass-II. |  |
| 3 | A3 | Write a program to create a Dynamic Link Library for any mathematical operation and Write an application program to test it. (Java Native Interface / Use VB or VC++) |  |
| **Group B (Any Two Assignments from Sr. No. 4 to 7)** | | | |
| 4 | B1 | Write a program to solve Classical Problems of Synchronization using Mutexand Semaphore. |  |
| 5 | B2 | Write a program to simulate CPU Scheduling Algorithms: FCFS, SJF (Preemptive), Priority  (Non-Preemptive) and Round Robin (Preemptive). |  |
| 6 | B3 | Write a program to simulate Memory placement strategies – best fit, first fit, next fit and  worst fit. |  |
| 7 | B4 | Write a program to simulate Page replacement algorithm. |  |
| **Part II : Elective I (Internet of Things and Embedded Systems)** | | | |
| 8 | C1 | Understanding the connectivity of Raspberry-Pi / Adriano with IR sensor. Write an  application to detect obstacle and notify user using LEDs.. |  |
| 9 | C2 | Understanding the connectivity of Raspberry-Pi /Beagle board circuit with temperature sensor.  Write an application to read the environment temperature. If temperature crosses a threshold  value, generate alerts using LEDs. |  |
| 10 | C3 | Understanding and connectivity of Raspberry-Pi /Beagle board with camera. Write an  application to capture and store the image. |  |
| 11 | C4 | Create a small dashboard application to be deployed on cloud. Different publisher devices can  publish their information and interested application can subscribe. |  |
| **Part II : Elective I (Software Project Management)** | | | |
| 12 | D1 | Create Project Plan  ▪ Specify project name and start (or finish) date.  ▪ Identify and define project tasks.  ▪ Define duration for each project task.  ▪ Define milestones in the plan  ▪ Define dependency between tasks  ▪ Define project calendar.  ▪ Define project resources and specify resource type  ▪ Assign resources against each task and baseline the project plan |  |
| 13 | D2 | Execute and Monitor Project Plan  ▪ Update % Complete with current task status.  ▪ Review the status of each task.  ▪ Compare Planned vs Actual Status  ▪ Review the status of Critical Path  ▪ Review resources assignation status |  |
| 14 | D3 | Generate Dashboard and Reports  • Dashboard  o Project Overview  o Cost Overview  o Upcoming Tasks  • Resource Reports  o Over-allocated Resources  o Resource Overview  • Cost Reports  o Earned Value Report  o Resource Cost Overview  o Task Cost Overview  • Progress Reports  o Critical Tasks  o Milestone Report  o Slipping Tasks  @The CO-PO |  |
| **Part II : Elective I (Human Computer Interface)** | | | |
| 15 | E1 | Design a paper prototype for selected Graphical User Interface. |  |
| 16 | E2 | Implement GOMS (Goals, Operators, Methods and Selection rules) modeling technique to  model user's behavior in given scenario. |  |
| 17 | E3 | Design a User Interface in Python. |  |
| 18 | E4 | To redesign existing Graphical User Interface with screen complexity. |  |
| **Part II : Elective I (Distributed System)** | | | |
| 19 | F1 | Implementation of Inter-process communication using socket programming: implementing  multithreaded echo server. |  |
| 20 | F2 | Implementation of RPC Mechanism. |  |
| 21 | F3 | Simulation of election algorithms (Ring and Bully). |  |
| 22 | F4 | Implementation of Clock Synchronization: a) NTP b) Lamports clock. |  |