

SDM COLLEGE OF ENGINEERING & TECHNOLOGY, DHARWAD

B.E in Computer Science and Engineering
Open Book Laboratory Internal Assessment-1 (CIE)

Sub. Code : 18UCSL405	Semester : IV (A & B div)
Sub. Title : Object Oriented Programming Lab	Date & Time : 20-5-2022 @ 3pm
Duration : 1 hour	Max. Marks : 25
Course Teacher(s) : U.P.Kulkarni (A) & I.R. Umarji (B)	

Note:

- 3 to 5pm on 20-5-2022 - Design and Writing code on paper.
- 6pm on 20-5-2022 to 9am on 21-5-2022 - Coding.
- Submission of print copy of code written at 10 am on 21-05-2022.
- Evaluation in regular laboratory through interaction with individual students keeping write-up as baseline.
- Robust code, readable code and proper documentation along with line numbers for every line of code is expected.
- Test cases containing all possible scenarios for all use-cases are mandatory.

PROBLEM STATEMENT:

You are asked to develop a software system to automate day-to-day operations of a company which contains several departments. Each department has a unique name, a unique number, and a particular employee is designated as manages the department, i.e., a role called manager. A department controls a number of projects, each of which has a unique name, and a single location. Record of each employee i.e. their name, social security number (SSN, which is employee ID), address, salary, gender, and birth date are to be stored and modified on request, approved by the concerned authority. An employee is assigned to one department and work on several projects, which are not necessarily controlled by the same department. Software is supposed to keep track of the following:

- Start date when the employee began managing the department.
- Number of hours per week that an employee works on each project.
- Direct supervisor of each employee.
- Dependents of each employee for insurance purposes. For this we maintain dependent's first name, gender, birth date, and relationship to the employee.

Do the following:

- Prepare the class diagram. - 5 Marks.
- List the various OOP features used with justification for their usage.- 2 Marks.
- Write a complete Java program to implement the design with following use-cases:
 - Register and Unregister Employees.
 - Register and Unregister Projects.
 - Assign/withdraw Projects to the departments.
 - Assign/withdraw projects to employees.
 - Print project details and employee details.
 - Other tracking activities mentioned above. 6 x 2 Marks = 12 Marks
- Write a short note on the various quality parameters of the code written.-3 Marks
- Prepare test cases. - 3 Marks.

Note: Suitable assumption can be made, if required, for the business case described above.