**Shri G S Institute of Technology and Science**

**Department of Computer Engineering**

**Assignment-3**

Q1.Create a class called Date that includes three pieces of information as instance variables—a month (typeint), a day (typeint) and a year (typeint). Your class should have a constructor that initializes the three instance variables and assumes that the values provided are correct. Provide a set and a get method for each instance variable. Provide a method displayDate that displays the month, day and year separated by forward slashes(/). Write a test application named DateTest that demonstrates classDate’s capabilities.

Q2. a. Create a super class called Car. The Car class has the following fields and methods. ◦intspeed; ◦doubleregularPrice; ◦Stringcolor; ◦doublegetSalePrice();

b. Create a sub class of Car class and name it as Truck. The Truck class has the following fields and methods. ◦intweight; ◦doublegetSalePrice();//Ifweight>2000,10%discount.Otherwise,20%discount.

C. Create a subclass of Car class and name it as Ford. The Ford class has the following fields and methods ◦intyear;◦int manufacturer Discount;◦doublegetSalePrice();//From the sale price computed from Carclass,subtract the manufacturer Discount

d. Create a subclass of Car class and name it as Sedan. The Sedan class has the following fields and methods. ◦intlength; ◦doublegetSalePrice();//Iflength>20feet,5%discount,Otherwise,10%discount.

e. Create MyOwnAutoShop class which contains the main() method. Perform the following within the main() method. ◦Create an instance of Sedan class and initialize all the fields with appropriate values. Use super(...) method in the constructor for initializing the fields of the superclass. ◦Create two instances of the Ford class and initialize all the fields with appropriate values. Use super(...) method in the constructor for initializing the fields of the super class

Q3.Write an application that plays “guess the number” as follows: Your program chooses the number to be guessed by selecting a random integer in the range 1 to 1000. The application displays the prompt Guess a number between 1 and 1000. The player inputs a first guess. If the player's guess is incorrect, your program should display Too high. Try again. or Too low. Try again. to help the player “zero in” on the correct answer. The program should prompt the user for the next guess. When the user enters the correct answer, display Congratulations. You guessed the number!, and allow the user to choose whether to play again.

Q4Assume that a bank maintains two kinds of accounts for customers one called

savings account and the other as current account. The savings account provides deposit, withdrawal and compound interest facilities. The current account provides deposit, withdrawal and simple interest facility. Current account holders should also maintain a minimum balance of Rs.1000 and if the balance falls below this level, a penalty of Rs.500 is imposed. If the balance account goes negative the account should block the withdrawal facility until the penalty amount is deposited i.e. Rs.500. Create a class account that stores customer name, account number and type of account. Create another two classes cur\_account and sav\_account to make them more specific to their requirements. Include necessary member functions in order to achieve the following tasks :

1. Accept deposit from customer and update balance.

2. Display account details i.e. balance, account type, account number and customer name.

3. Compute the deposit interest.

4. Permit withdrawal and update the balance.

5. Check for the minimum balance, impose penalty and update the balance.

NOTE : The first step when the program is executed is to ask the user to create an account out of the two types of account and deposit some account. Once the account is created with an account number the other options should be given to the user according to the account type. In case of withdrawal and deposit here, the time period after which the transaction is made should also be queried and accordingly interest will be computed and updated in the balance.

Q5. . Create a class employee which is inherited by Manager, Engineer and Researcher.In the following flowchart leaves permissible per month are denoted by ‘L’ and initial salary as ‘S’. The salary hike specified needs to be applied on an annual basis w.r.t Date of Joining(DOJ). Create a system wherein on entering the DOJ of an employee and the leaves taken for one year, the salary of the employee per month is shown in output along with the leave balance.

Note: The leaves are renewed on 1st Jan and hence the annual year under consideration for leave balance is 1st Jan to 31st Dec.