

## Assignment 1

Deadline: 9<sup>th</sup> March 1, 2019 18.00 PM

You need to upload your program, output, screenshots with your registration no directory.

Any plagiarism/copy found or matching with anybody then all of them will get zero mark.

### Problem 1: (15 Points)

There is a competitions is going to be in IIIT Sri City. Let us say this is going to be having set of events

1. Paper Presentation
2. Poster Presentation
3. Quiz
4. Cultural program

Participant should have (should have author/authors name, address, gender, email, mob no). Can you design various classes requires for the program and have a registration program, which should obey the below rules.

### Rules

1. Participant should be above 18 yrs of Age
2. Only UG4 can take part in Paper Presentation
3. Paper presentation and poster presentation cannot be opted together
4. Participant should take part minimum in 1 event and maximum in 3 event
5. Maximum participant in Gents category must be 60% and Ladies must be 40%
6. One participant should not have more than two topic for either Paper presentation or poster presentation
7. Quiz can only conducted in 2<sup>nd</sup> half and max mark is 30 and time duration is 30 mins
8. Paper/Poster presentation is only for 15 min, max participant is 10 can be conducted in morning
9. Quiz does not require and judges and paper and poster cannot be done together.
10. Cultural programs must be in the evening and a minimum duration of 1 program is 15 min and maximum 5 programs

### Direction

1. Should have a Participant class, with the properties and behaviors it require, constructors, getters and setters
2. Should have an Event class with its properties and behaviors, constructors, getters and setters
  - a. All the other event should be inherited from the base event class with overriding its rules
3. There must be a Registration class which should accept the data through console and reject if does not comply with the rule of registration

## Problem 2: (10 points)

A company named “ABCCompany” needs a program to calculate how much to pay their hourly employees. As per Labor Law, it requires that employees get paid time and a half for any hours over 40 that they work in a single week.

For example, if an employee works 45 hours, they get 5 hours of overtime, at 1.5 times their base pay. For ex: The State of Karnataka requires that hourly employees be paid at least 400 per hour. ABC Company, requires that an employee not work more than 60 hours in a week.

### Rules

1. An employee gets paid (hours worked)  $\times$  (base pay), for each hour up to 40 hours.
2. For every hour over 40, they get overtime = (base pay)  $\times$  1.5.
3. The base pay must not be less than the minimum wage (400 per hour). If it is, print an error.
4. If the number of hours is greater than 60, print an error message.
5. Whose base pay is 30% less than higher will be given Diwali bonus as 20%

### Directions:

Create a new class called ABCCompany. Design the class and write method that takes the base pay and hours worked as parameters, and prints the total pay or an error. Class should have constructors, getters, setters. Define variables/methods with access specifiers. Inherit the class for set of employees who are eligible for “Diwali Bonus”. Write a main method that calls this method for each of these employees:

	Base Pay	Hours Worked
Employee 1	485	55
Employee 2	350	47
Employee 3	415	60
Employee 4	499	67
Employee 5	420	55

Submit your ABCCompany.java file. Do not try to write the entire program in one go. It is much easier to write a small piece and test it, then write another small piece and test it. For example, start by writing just a skeleton of your method and your main program. Then add the code to do the normal salary computation, without any special rules. Then add each additional rule, one at a time. You should test your program with simple test inputs to check that you handle each case.

**Problem 3: (5 points)**

- What is final modifier explain with an example? Java.lang package in java is of which modifier class?
- What is the difference between JDK, JRE, JVM?
- What is JIT compiler?
- Is copy constructor available in Java and how this is handled? Is there any method in object class which can be used for?
- What is the output of the following program ? and explain why?

```
class Test
{
    int tempa, tempb;
    Test(int a, int b)
    {
        tempa = a;
        tempb = b;
    }
    public static void main (String args[])
    {
        Test t = new Test();
        System.out.println(t.tempa+" "+t.tempb);
    }
}
```

BEST OF LUCK!