Practical Assignment – 1

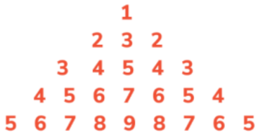
1. Take your full name at run time using **command line arguments** and display on screen using Java program.
2. Find and display middle value from given three numbers by using **if…else** statements.
3. Write a java program to display result according to given marks by using **if…else if** statement.
   If marks > 70 display ‘Distinction’
   If marks > 60 display ‘First class’
   If marks > 50 display ‘Second class’
   If marks > 35 display ‘pass class’
   Otherwise display ‘Fail’.
4. Write a java program to print following pattern using **while loops** only.

```
1
2 4
3 6 9
4 8 12 16
5 10 15 20 25
```

5. Write a java program to print following pattern using **for loops** only.

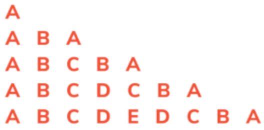
```
12344321
123**321
12****21
1******1
```

6. Display factorial of given number using **do…while loop** in java program.
7. Use **swich case** statement in Java program for printing week name for the given number.
8. Write a java program to print following pattern.



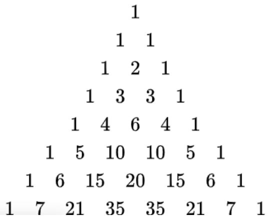
```
            1
          2 3 2
        3 4 5 4 3
      4 5 6 7 6 5 4
    5 6 7 8 9 8 7 6 5
```

9. Write a java program to print following pattern.



```
A
A B A
A B C B A
A B C D C B A
A B C D E D C B A
```

10. Write a java program to print Pascal's triangle as shown below.



```
               1
             1   1
           1   2   1
         1   3   3   1
       1   4   6   4   1
     1   5  10  10   5   1
   1   6  15  20  15   6   1
 1   7  21  35  35  21   7   1
```

11. Write a program to generate first 10 numbers of Fibonacci series.
12. Write a program to generate reverse number of given 4 digit number.

Practical Assignment – 2

1. Create a class Purchase in which product_id, product_name, unit_price, total_qty, total_price are data members. Take Input from user and display result as following. **(Use static variable and static function concept)**

```
PID     PNAME    PRICE   QTY    Total    BILL_AMOUNT
P1      T-shirt    500     3     1500           1500
P2      Cap        100     5      500           2000
P3      Watch     2000     1     2000           4000
------------------------------------------------------------------------
Total Bill :  4000 rs
```

2. Do addition of two values passing by command line arguments and display it. **(Use type conversion concept)**

3. Make CALC class with two data members no1 and no2. This class have addition, subtraction, multiplication and division methods which take input from user and display result. **(Make menu-driven program)**

   0. Exit
   1. Take two input values (for no1 and no2)
   2. Addition
   3. Subtraction
   4. Multiplication
   5. Division

4. Create a class Area to calculate and display area of square, rectangle and triangle using the three same name methods. **(Use function overloading concept).**

   Area of square ➔ length*length
   Area of rectangle ➔ length*width
   Area of triangle ➔ (length*width)/2

5. Create integer array of size 5. Insert 5 values through user and sort the array and display it. **(Sorting int array)**

6. Create one string array of size 5. Insert 5 names through user and sort the array name wise and display it. **(Sorting String array)**

7. Create STACK class to perform push and pop operations on int array. **(Make menu-driven program)**

   0. Exit
   1. Push
   2. Pop
   3. Display

8. Write a program in java to find A x B where A is a matrix of 3 x 3 and B is a matrix of 3 x 4. Take the values in matrix A and matrix B from the user. **(Use two dimensional array)**

9. Create class EMPLOYEE with id, name and salary data-members. Create 5 employee objects by using **array of objects** concept. Take input from user for creating these 5 employees (objects). Display all employee's data (objects). Display all employee's data (objects) in **ascending order of salary**. Display all employee's data (objects) in **descending order of name.**

Practical Assignment – 3

1. Write a Java program to show use of **final keyword** before variable, method and class.
2. Write a program which show the **calling sequence of default constructor** in multilevel inheritance.
3. Write a Java program to show that **super keyword** used in child class to access parent class constructor, data members and member functions.
4. Write a java program to show that **abstract class** can have abstract and non-abstract (concrete) methods. And child class of abstract class must have to give definition of all abstract methods of abstract class otherwise child class have to declare abstract class.
5. Write a program which show the **Dynamic method dispatch (run time polymorphism)** using one parent class and two child classes.
6. Write a program which show the **Dynamic method dispatch (run time polymorphism)** using one **parent abstract class** and two child classes.
7. Write a program which show the **Dynamic method dispatch (run time polymorphism)** using one **parent interface** and two child classes.
8. Write a program in Java to show the usefulness of **Interfaces** as a place to keep **constant value** of the program.
9. Create an **Interface** having two methods division and modules. Create a class, which **overrides** these methods.
10. Write a program in Java which **show that interface can inherit another interface.**
11. Write a program which show **partial implementation** concept in interface.
12. Write a program to accept 5 names from the user (entered names may be in capital letters or small letters or mix of capital and small.), **find and print** those names whose surname is “Patel” (‘Patel’ can be in capital letters or small letters or mix of capital and small).
13. Write a java application which accept two strings. Merge both the string using **alternate characters** of each string.

    For example. Enter string1 : “Hello”, Enter string2 : “Good”.

    Result should be, “**H**G**e**o**l**o**l**d**o**”.

    Another example. Enter string1 : “dog” and Enter string2 : “elephant”.

    Result should be, “**d**e**o**l**g**ephant”.
14. Write a java code which accept a string from user and convert the string in **upper case** and display the string in **reverse order.**

    For example. Enter string : “how and where”

    Result should be, Upper case : “HOW AND WHERE”, Reverse : “EREHW DNA WOH”
15. Write a program in Java to create a String object. Initialize this object with your full name. **Find** the **length** of your full name but remember that space not have to be count. **Find** the **number of times** ‘a’,’e’,’i’,’y’ appears in your name. Also print **locations (index)** of occurrences of ‘a’,’e’,’i’,’y’.

    For example. Enter your name : “Raj Jayeshbhai Patel”

    Result should be,

    Length = 3+10+5=18
    a – 4 times at index 1,5,12
    e – 2 times at index 7,18
    i – 1 times at index 13
    y – 1 time at index 6
16. Write a program for **searching** a **sub-string** from the given sentence entered by user. If found then also calculate **number of times** given **sub string occur** in given sentence. Also replace it with some other sub-string entered by user.

    For example. Enter string : “This is my car. That is your car. Where is your brother car?”

    Enter sub-string : “is”
    Occur : 3 times
    Enter replace sub-string : “was”
    New string : “This was my car. That was your car. Where was your brother car?”

(*Programs No. 17,18 and 19 are optional. These programs just for practice for extra ordinary students.)

17. Create your own MyString class in which you have to create method insertAt(int index, subString s) which will insert substring at given index. (*note : Do not use inbuild insert() function. Use your own logic to insert substring in given String.)

For example. Enter String : He is Raj.
Enter Substring : Mr.
Enter index : 6
Output : He is Mr. Raj.

18. Create your own MyString class in which you have to create method deleteOf(int startIndex, int lastIndex) which will delete substring from given string. (*note : Do not use inbuild delete() function. Use your own logic to delete substring from given String.)

For example. Enter String : He is Mr. Raj.
Enter start index : 6
Enter last index : 8
Output : He is Raj.

19. Create your own MyString class in which you have to create method replaceOf(String s1, String s2) which will replace substring s1 with new substring s2 in given string. (*note : Do not use inbuild replace() function. Use your own logic to replace substring in given String.)

For example. Enter String : He is Mr. Raj. He is my brother.
Enter substring s1 : is
Enter substring s2 : was
Output : He was Mr. Raj. He was my brother.

Practical Assignment – 4

1. Write a program which show finally block is called after try/catch block and before function return.

2. Create your own User defined checked exception MobileNumberException if user entered mobile number is not valid. (*Note : mobile number length must be 10 digits and only 0 to 9 digits are allowed. Other characters or symbols are not allowed.)

3. Create your own User defined unchecked exception InvalidCharException if any one of the char @,*,? is present in name given by user.

4. Write a program to create chain of exceptions as following.

LeaveNotGrantedException ➔ UrgentProjectWorkException ➔ ProjectDueDateException

5. Create java application which display clock. Display time using thread concept.

6. Write a program to accept 10 names from the user. Find all the names which start from 'J' and display them at interval of 2 sec. (*Note : take at least 4 to 5 names which start from 'J')

7. Write a program which show threads are working simultaneously (parallel) in multithreading concept.

8. Write a program to make a package Balance in which Account class is with display_Balance method in it. **Import** Balance **package** in another program to access display_Balance method of Account class.

9. Write a program which show the **different package non sub class concept.** Check the result of different access specifiers – private, public, protected and default.

10. Write a program which show the **different package sub class concept.** Check the result of different access specifiers -– private, public, protected and default.

11. create an applet program which display rotated text of your name at one place.

12. create an applet program to display your name which move in window left to right.

13. create an applet program which take input from parameters through param tag for EMP class and Display name, age, salary, city of employee.

14. create an applet program which display triangle having circle. Circle have to touch with all edges of triangle. Also write your name between circle.

15. Write an applet program which show **Digital Clock.**

16. Write an applet program which **display image** in window.

17. Write an applet program which **change background colour** by click on different buttons.

18. Write a java program to create **Singly Link List** to perform create, insert, delete and display node using menu driven program.

19.Write a java program to create **Singly Circular Link List** to perform create, insert, delete and display node using menu driven program.

Switch case - menu options for Prog. 18 and 19

1. Create Linked List
2. Display linked list
3. Display total nodes in linked list

4. Search specific node and also display its position
5. Insert node at last
6. Insert node at first
7. Insert node at specific position
8. Insert node after specific node
9. Insert node before specific node
10. Delete last node
11. Delete first node
12. Delete node from specific position
13. find and delete specific node
14. find and update value of specific node
15. Display linked list in reverse order
16. Create linked list in reverse order