6/1/24

Write a Java program to create a generic class Stack which hold 5 integers and 5 double values

```
import java.util.Scanner;
class Stack<E>{
    E stck[];
    int top;
    final int size=10;
    Stack(){
      stck=(E[])new Object[size];
      top=-1;
    }
    void push(E item){
      if(top==size-1){
        System.out.println("Stack is full");
      }
      else{
        stck[++top]=item;
      }
    }
    E pop(){
      if(top<0){
        System.out.println("Stack is empty");
        return null;
      }
      else{
        return stck[top--];
      }
    }
}
```

```
public class generics {
    public static void main (String args[]) {
     Stack<Integer> mystack1 = new
     Stack<Integer>();
    Stack<Double> mystack2 = new Stack.
    <Double>();
    Scanner s = new Scanner (System.in);
    System.out.println ("Enter the elements");
    for(int i=0; i<5; i++){
          int n = s.nextInt();
          mystack1.push(n); }
    System.out.println ("Enter the elements");
     for(int i=0; i<5; i++){
          int m = s.nextDouble();
          mystack2.push(m); }

    System.out.println ("Elements of stack1:");
    for(int i=0; i<5; i++) {
        System.out.println(mystack1.pop());
    }
    for(int i=0; i<5; i++){
        System.out.println(mystack2.pop());
     }
    s.close();
    }
}
```

output :

Enter the elements into the integer stack
1
2
3
4
5
Enter the elements into double stack
5
6
7
4
3
Elements of stack 1: 5
4
3
2
1
Elements of stack 2:
3.0
4.0
7.0
6.0
5.0

Write a java program to create an abstract class shape with abstract methods calculateArea() & calculate perimeter(). Create subclass - Circle & Triangle that extends the Shape class and implement the respective methods to calculate area and perimeter of each shape.

```
import java.lang.Math;
abstract class Shape{
    double a;
    double b;
    double c;
    abstract void calculateArea();
    abstract void calculatePerimeter();
}

class Triangle extends Shape{
    Triangle(double x, double y, double z)
{
    a=x;
    b=y;
    c=z;
}
void calculateArea(){
    double s=(a+b+c)/2;
    System.out.println("Area" +
(Math.sqrt(s*(s-a)*(s-b)*(s-c))));
}
```

```
void calculateperimeter(){
    System.out.println("Perimeter=" +
    (a+b+c));
  }
}
class Circle extends Shape{
    circle(double r){
            a=r;
    }
    void CalculateArea(){
      System.out.println("Area" +(Math.PI*
                                  a*a));
    }
    void calculateperimeter(){
      System.out.println("Perimeter=" +
        (2* Math.PI * a));
    }
}
class ShapeM{
    public static void main(String[] args)
{
Triangle t=new Triangle(2.0, 3.0, 5.0);
Circle c=new circle(5.0);
t.calculateArea();
t.calculateperimeter();
c.calculateArea();
c.calculateperimeter();
  }
}
```

o/p:

Area: 4.145780987944925.
perimeter = 111.0
Area = 98.5398163
Perimeter = 31.41592653.

Demonstrate string length, String distance, String concat.

```
Public class String{
    public static void main(String args[])
{
  System.out.println("Demonstrate string length");
char.char [] = {"a","b","c"};
String s1 = new String(char);
System.out.println(s1.length());
String.out.println("String concat");
String. age = "19";
String s2 = "He is" + age + "years old";
System.out.println(s2);
System.out.println("demonstrate literals");
System.out.println("abc".length());
}
}
```

O/P:

Demonstrating string length:
5
str. concat
He is 4 years old
Demonstrate literals. : 3

Use getchars() to extract BMSCE from "Welcome to BMSCE college".

```
public class String{
    public static void main(String args[])
    {
        String s = "Welcome to BMSCE college";
        int start = 10;
        int end = 16;
        char buf[] = new char[end - start];
        s.getchars(start, end, buf, 0);
        System.out.println(buf);
    }
}
```

O/P:

BMSCE

16/01/24

Lab6 Strings

(1) BMSCE
BMSCE

(2) 3
3
Roll no 10 is present.

(3) Dimensions are 10.0 by 14.0 by 12.0
box b: Dimensions are 10.0 by 14.0 by 12.0

(4) bmsce

(5) 65
66
67
Welcome to bmsce college

(6) Bmsce equals Bmsce → true
Bmsce equals college → false
Bmsce equalsIgnoreCase BMSCE → true

(7) Substring is matched
s1 = "Bmsce college"
s2 = "Welcome to Bmsce college of Engineering"

(8) true
false

(9) false
true

(10) Hello equals Hello → true
Hello == Hello → false

(11) The names in alphabetical order are
apple
ball
cat
lion
watch

(12) Sorted Numbers (Ascending order) -
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

(13) Thwor was a test. Thwar was too

(14) hello world

(15) commage

(16) Hello friends

(17) student 1
name: prateek
Reg no: 123
Semsta: 3
CGPA: 8.87

student 2
name: Haneesh
Reg no: 121
semester: 4
CGPA : 9.85

(18) charAt 3 is 'A'
reverse of SBS is SAS

(19) Eagle is flying
Eagle makes a sound

Hawk is moving
Hawk is making a sound

(20) Circle - Area: 78.5398
perimeter - 31.4259

Triangle - Area: 5.0
Perimeter - 12.0

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