- Develop a java program to create an abstract class named shape that contains two integers and an empty method named printarea(). Provide three classes Rectangle, Triangle & Circle that extends Shape.

```
abstract class Shape
{
    int i, j;
    public abstract void printArea();
}
Class Rectangle extends Shape
{
    Rectangle (int i, int j)
    {
        this.i = i;
        this.j = j;
    }
    public void printArea()
    {
        System.out.println("area of rectangle"
: "+i*j);
    }
}
Class Triangle extends Shape
{
    Triangle (int i; int j)
    {
        this.j = i;
```

abstract
integers
provides
shape.

```
        this.j = j;
    }
    public void printArea()
    {
        System.out.println("area of Triangle
" + i*j/2);
    }
}
class Circle extends Shape
{
    Circle(int i)
    {
        this.i = i;
    }
    public void printArea()
    {
        System.out.println("area of circle:"
+ 3.14*i*i);
    }
}
class Area
{
    public static void main(String args[])
    {
        Rectangle r = new Rectangle(10,20);
        Triangle t = new Triangle(10,20);
        Circle c = new Circle(5);
```

```
        r.printArea();
        t.printArea();
        c.printArea();
    }
}
```

Algorithm

Start

1) Create a abstract class called Shape
2) Create an abstract method printarea which you cant create an instance
3) To access printArea method as it is object create subclass
4) Create subclass Rectangle, Circle, Triangle and constructors which takes values of user input and evaluate it
5) Create a main function in same or different class
6) Create instance objects for the class rectangle, Circle and triangle and pass parameters to function.

Stop

Output:

Area of rectangle: 200
Area of triangle : 100
Area of circle : 78.5

```
C:\Users\bmsce\Desktop\1bm22cs027 ooj>javac Area.java

C:\Users\bmsce\Desktop\1bm22cs027 ooj>java Area
AKANKSHA SINGA
1BM22CS027
area of Rectangle: 200
area of Triangle: 100
area of Circle: 78.5
```

- Create a class Book which contains four members. name, author, price num-pags Include a constructor to set the values for the members. Include methods to set and get the details of the object Include toString() method that could display the complete details of the book. Develop a java program to create n book objects

→
```
import java.util.Scanner;
class Book.
{
    String name;
    String author;
    float price;
    int num-pages;
}
Void setdetails()
{
Scanner sc = new Scanner(System.in);
System.out.println("enter name:");
name = sc.next();
System.out.println("enter author name")
author = sc.next();
System.out.println("enter price of book:");
```

```
    price = sc.nextFloat();
    System.out.println("enter number of
    pages in book:");
    num_pages = sc.nextInt();
  }
Void getdetails
{
    toString();
}
Void tostring()
{
  System.out.println("Book details :
Name of Book:" + name + "Author : " + author
+ "Price :" + price + "no of pages" + num_pg
}
  public static Void main(String args[])
{
  Scanner sc= new Scanner(System.in);
  System.out.println("Enter no of books")
      int n = sc.nextInt();
    int bc Book b[] = new Book[n];
    for (i=0; i<n; i++)
{
      b[i] = new books();
      b[i].setdetails();
}
System.out.println("book details:");
```

```
    for (i=0; i<n; i++)
    {
        b[i].getdetails;
    }
}
```

enter no of books = 3
enter book name: abc
enter author name: def
enter price: 200
enter no of pages: 100
enter book name: xyz
enter author name: vvv
enter price: 100
enter no of pages: 50
details of book: name: abc author: def
price: 200 num_pages: 100
details of book: name: xyz author: vvv
price 100 num-pages: 50

- Algorithm:

1) Start
2) Create a class Book which has variable that describes details of the Book (name, author, price, no-of-pages)
3) Create a function set details which takes input from user for details of each book through main function
4) Create a function get details which calls the toString method to describe all the details of a given book
5) Create a to string method which prints the details of a particular Book
6) Create a main method initialise an array b of type Book and create instance of it at each index
7) Stop

Thu 18/01/24
d/p seen

```
C:\Users\bmsce>cd C:\Users\bmsce\Desktop\1bm22cs027 ooj

C:\Users\bmsce\Desktop\1bm22cs027 ooj>javac Book.java

C:\Users\bmsce\Desktop\1bm22cs027 ooj>java Book
AKANKSHA SINGA
1BM22CS027
Enter no.of of books:
3
enter book name:
abc
enter author name:
def
enter price:
200
enter no. of pages:
100
enter book name:
xyz
enter author name:
uvw
enter price:
100
enter no. of pages:
50
enter book name:
fgh
enter author name:
hij
enter price:
300
enter no. of pages:
500
details of book:  name:abcauthor: defprice:200.0num_pages:100
details of book:  name:xyzauthor: uvwprice:100.0num_pages:50
details of book:  name:fghauthor: hijprice:300.0num_pages:500
```