8 Create a class Book which contains 4 members, name, author, price, num_pages. Include a constructor to set the values of the members. Include methods to set and get the details of the objects. Include a 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 set_details()
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("enter bookname, author, price, num_pages");
        name = sc.next();
        author = sc.next();
        price = sc.nextFloat();
        num_pages = sc.nextInt();
    }
```

```
void get_details()
{
    String details = toString();
    System.out.println(details);
}
public String toString()
{
    return "the book" + name + "was written by " + author + " it consists of " + num_pages + " pages and costs around " + price;
}
public static void main(String[] args)
{
    Scanner scan = new Scanner(System.in);
    System.out.println("enter no of books you want to generate");
    int n = scan.nextInt();
    book b[] = new book[n];
    for(int i=0; i<n; i++)
    {
        b[i] = new book();
        b[i].set_details();
    }
    System.out.println("book details");
    System.out.println();
    for(int i=0; i<n; i++)
    {
        b[i].get details();
    }
}
}
```

Algorithm

Start

Step 1: Create a class book with members name, author, price and number of pages

Step 2: get the details of the book through the method set_details, accept values from the user

Step 3: display the details of the book using to string method

Step 4: create a to string method which would return the details of the book in one String

Step 5: create the main class method now

Step 6: ask the user for the number of books to be entered

Step 7: Create an array of type book consisting n books

Step 8: for i ranging from 0 to n initialize all the n books and set_details of all the books individually.

Step 9: Now for all books print the details of every book.

Step 10: Stop

```
Akshara Singa 1BM22CS029
enter bookname,author,price,num_pages
Python
ABCDEF
234
567
enter bookname,author,price,num_pages
JAVA
XYZ
565
567
the book Java was written by Strange it consists of 9857 pages and costs 243.0rupees.
the book Python was written by ABCDEF it consists of 567 pages and costs 234.0rupees.
the book JAVA was written by XYZ it consists of 567 pages and costs 565.0rupees.
```

1) Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide 3 classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea() that prints the area of the given shape.

→
```
import java.util.Scanner;
abstract class Shape
{
    int x, y;
    abstract void area();
    public static void main (String args[])
    {
        Shape obj1 = new Circle();
        obj1.area();
        Shape obj2 = new Triangle();
        obj2.area();
        Shape obj3 = new Rectangle();
        obj3.area();
    }
}

class Rectangle extends Shape
{   System.out.println("Enter length and
    breadth of the rectangle");
```

```
Scanner sc = new Scanner (System.in)
x = sc.nextInt();
y = sc.nextInt();

void public void area()
{ System.out.println("The area of
  rectangle is, x*y); }
}

class Circle extends Shape
{ System.out.println("Enter radius of
  the circle");
  Scanner sc = new Scanner (System.in)
  x = sc.nextInt()
  y = x;

public void area()
{ System.out.println("The area of
  Circle is 3.14*x*y); }
}

class Triangle extends Shape
{ System.out.println("Enter base and
  height of the Triangle");
  Scanner sc = new Scanner (System.in)
  x = sc.nextInt();
  y = sc.nextInt();
```

```
public void area()
{
    System.out.println("The area of
    Triangle is 0.5*x*y");
}
}
```

Algorithm

Step 1: Start

Step 2: Create an abstract class Shape

Step 3: Initialize two integers

Step 4: Initialize an abstract method area

Step 5: create a class rectangle extending class Shape

Step 6: Initialize value of x and y to x, y

Step 7: construct method area returning x*y

Step 8: Create a class circle extending class Rectangle

Step 9: Initialize value of x and y to 1 and 0

Step 10: construct method area returning x*y

Step 11: Create a class triangle

Step 12: Initialize value of x and y to b and h

Step 13: print area = 1/2 b*h

Step 14: Stop

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```
Akshara 1BM22CS029
enter the radius of the circle
1
area of circle is 3.14
enter the length and breadth of the rectangle
2
2
area of rectangle is 4
enter the base and hieght of the triangle
2
2
area of triangle is 2.0
```