LAB1

import java.util.Scanner;

class QuadraticEquations

{

public static void main(String args[])

{

double a,b,c,D;

double r1,r2;

Scanner in = new Scanner(System.in);

System.out.println("Enter the constants a,b and c of the quadratic equation a(x)^2+b(x)+c=0 : ");

a = in.nextDouble();

b = in.nextDouble();

c = in.nextDouble();

System.out.println();

System.out.println("Input Quadration Equation : "+a+"(x)^2 + "+b+"(x) + "+c+" = 0");

System.out.println();

D = (b\*b)-(4\*a\*c);

if(D>0)

{

System.out.println("Roots are real and unequal since Discriminant = "+D);

r1 = (-b + Math.sqrt(D))/(2\*a);

r2 = (-b - Math.sqrt(D))/(2\*a);

System.out.println();

System.out.println("Roots of the quadratic equation are "+r1+" and "+r2);

}

else if(D==0)

{

System.out.println("Roots are real and equal since Discriminant = "+D);

r1 = r2 = (-b)/(2\*a);

System.out.println();

System.out.println("Roots of the quadratic equation are "+r1+" and "+r2);

}

else

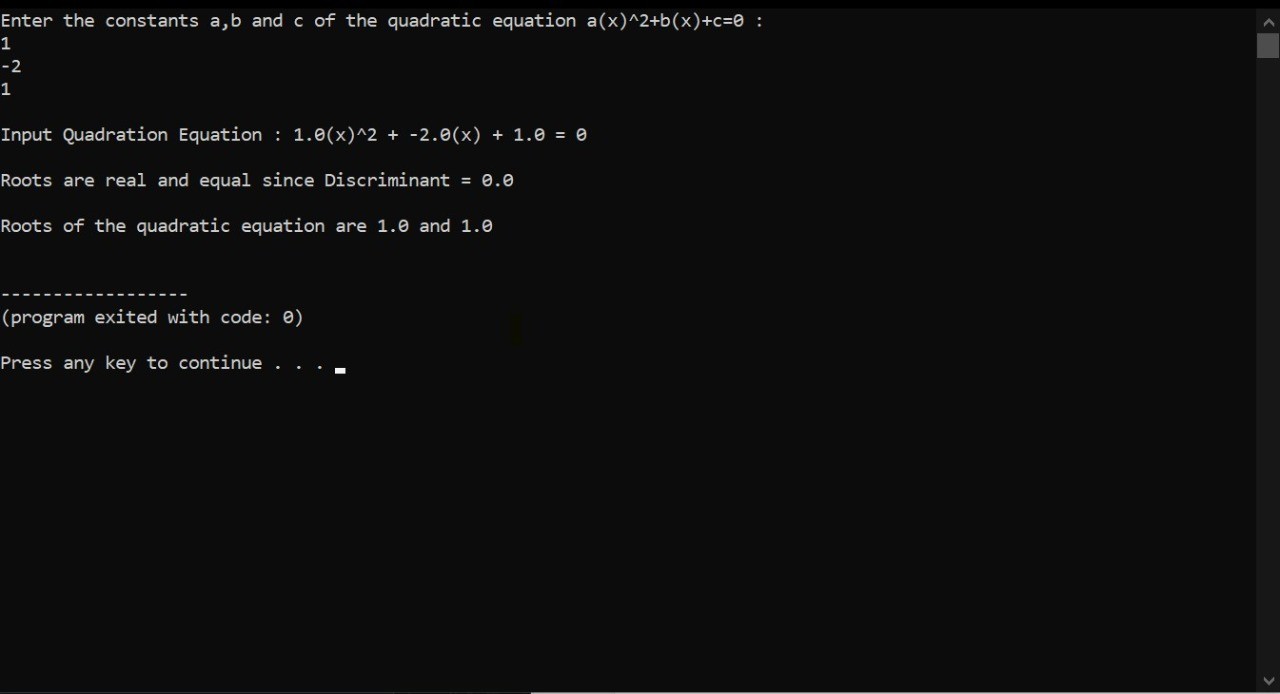
{

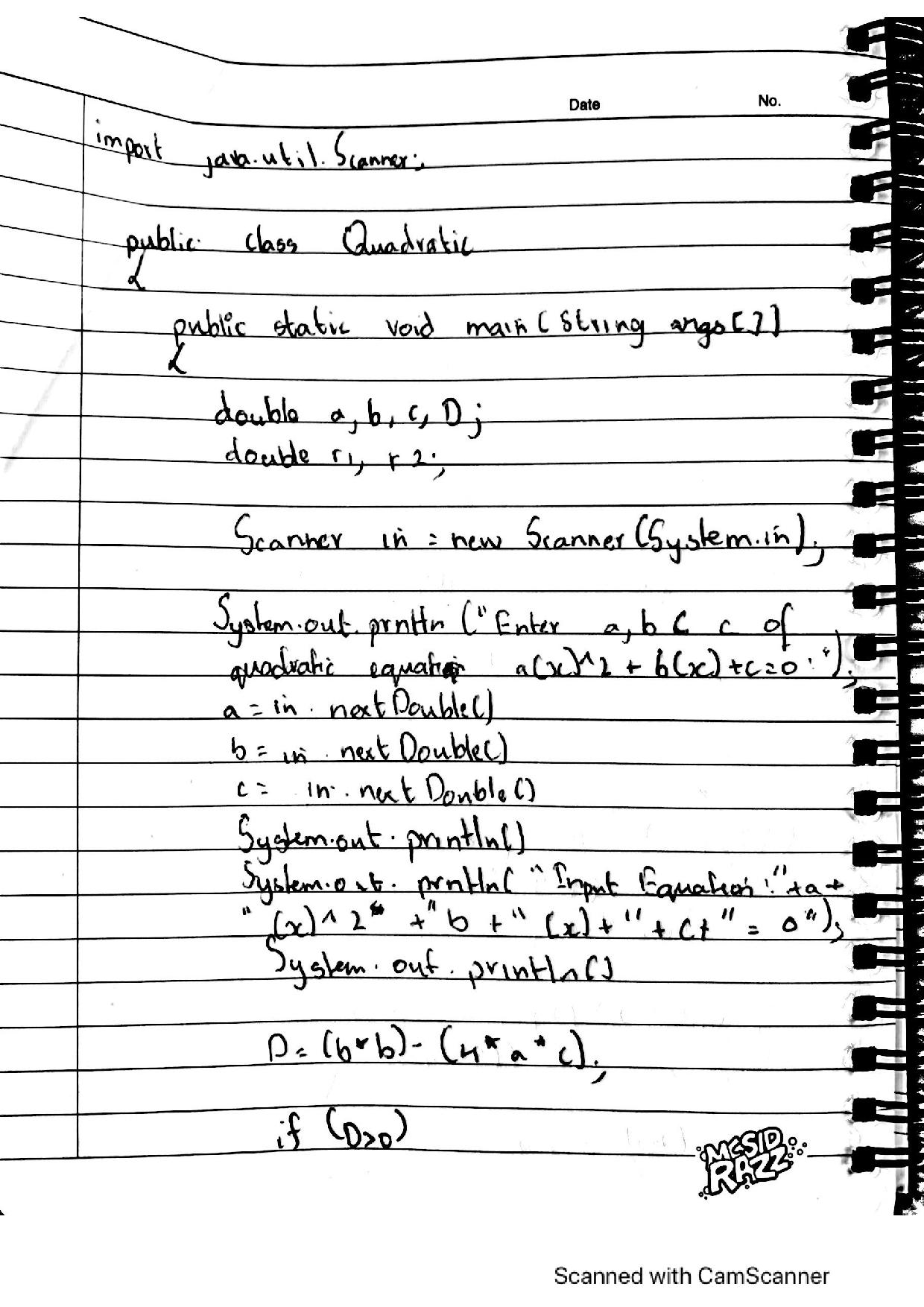
System.out.println();

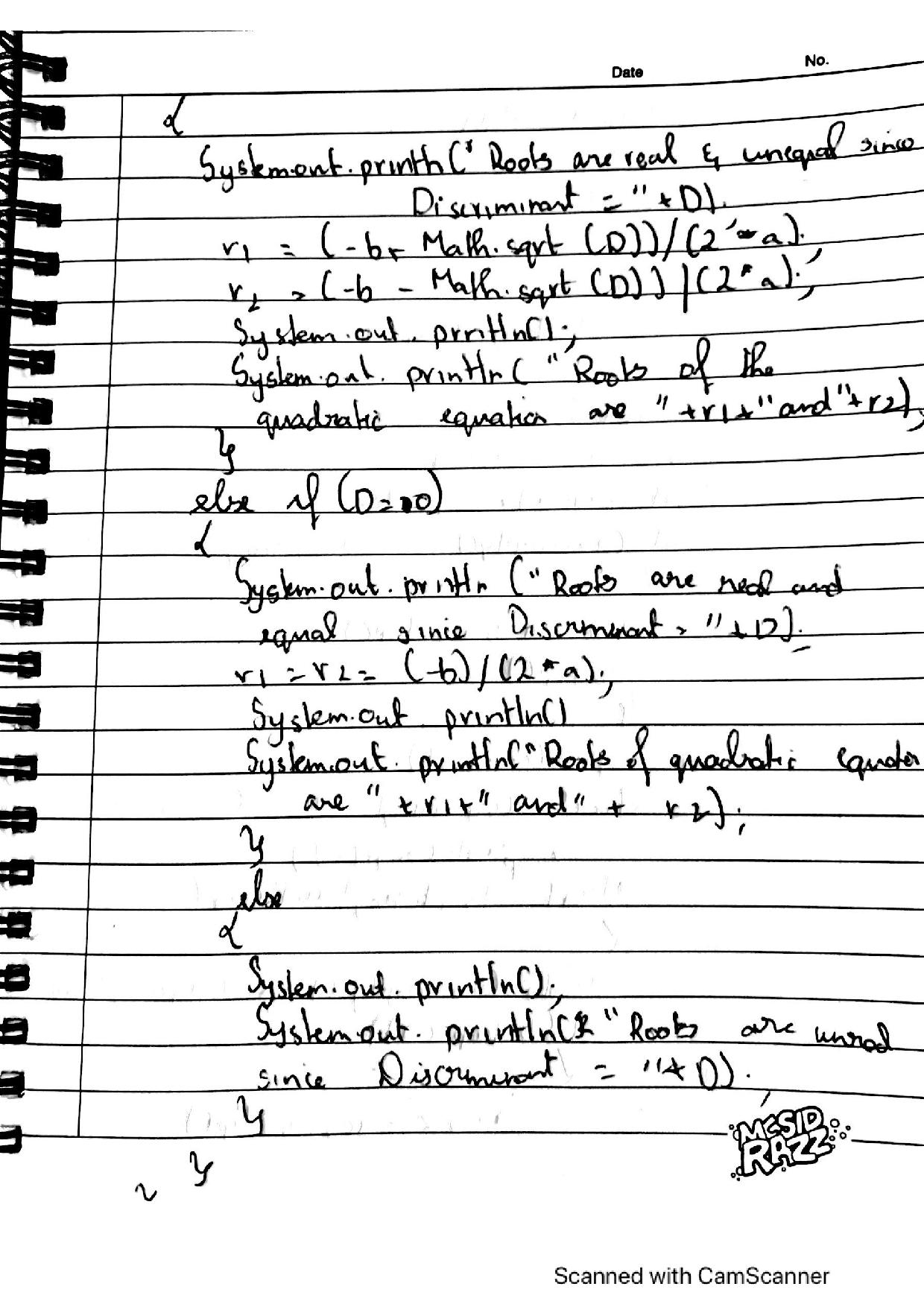
System.out.println("Roots are unreal since Discriminant = "+D);

}

}

}





LAB 2

import java.util.Scanner;

class Student{

Scanner sc = new Scanner(System.in);

String USN;

String Name;

int credits[] = new int[5];

float marks[] = new float[5];

int points[] = new int[5];

float SGPA;

int totalCredits = 0;

void getDetails(){

System.out.println("Enter student USN: ");

USN = sc.nextLine();

System.out.println("Enter student Name: ");

Name = sc.nextLine();

for(int i=0;i<5;i++){

System.out.println("Enter Credits for Subject " + (i+1) + ": ");

credits[i] = sc.nextInt();

totalCredits += credits[i];

System.out.println("Enter Marks for Subject " + (i+1) + ": ");

marks[i] = sc.nextFloat();

}

}

void showDetails(){

System.out.println("Student USN: " + USN);

System.out.println("Enter student name: " + Name);

for(int i=0;i<5;i++){

System.out.println("Subject " + (i+1) + " - Credits: " + credits[i] + " - Marks: " + marks[i]);

}

System.out.println("SGPA of " + Name + " is: " + (float)(SGPA/totalCredits));

}

void calcSGPA(){

for(int i = 0;i<5;i++){

if(marks[i] > 100){

System.out.println("Error: Marks are above 100");

return;

}else if(marks[i] >= 90){

points[i] = 10;

}else if(marks[i] >= 80){

points[i] = 9;

}else if(marks[i] >= 70){

points[i] = 8;

}else if(marks[i] >= 60){

points[i] = 7;

}else if(marks[i] >= 50){

points[i] = 5;

}else if(marks[i] >= 40){

points[i] = 4;

}else{

points[i] = 0;

}

SGPA += (points[i]\*credits[i]);

}

}

}

public class program {

public static void main(String args[]) {

Student st1 = new Student();

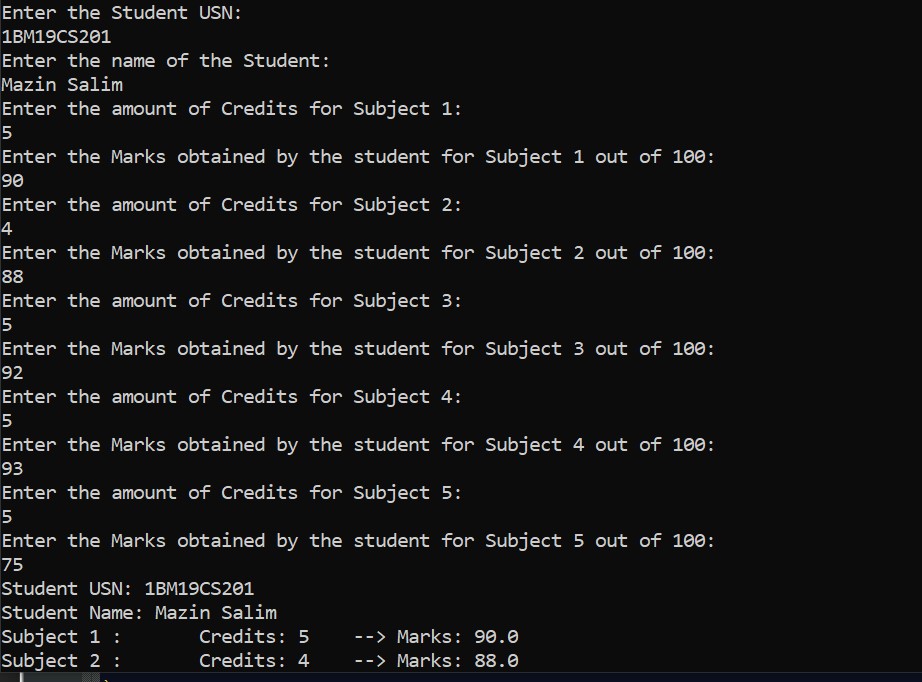
st1.getDetails();

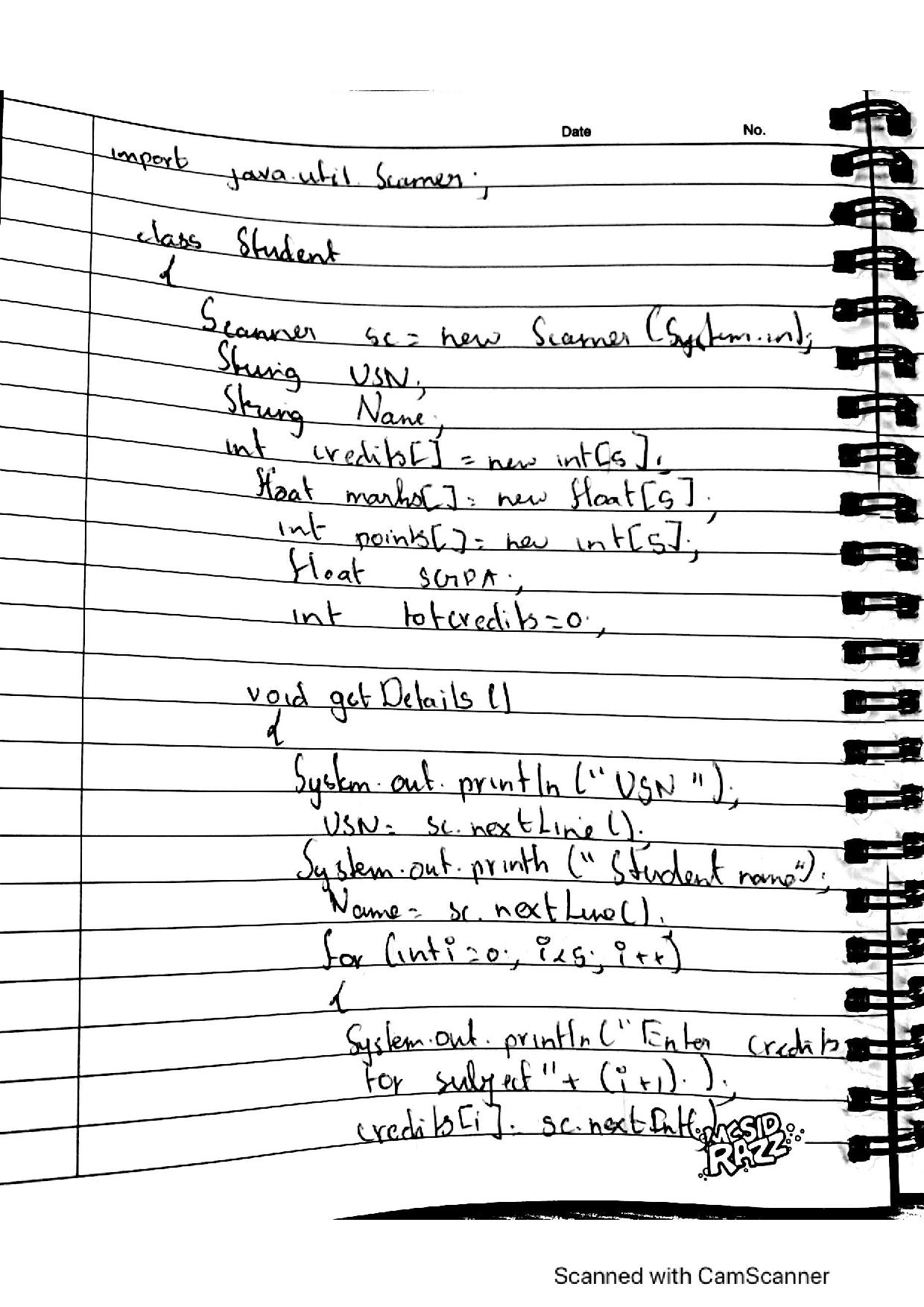
st1.calcSGPA();

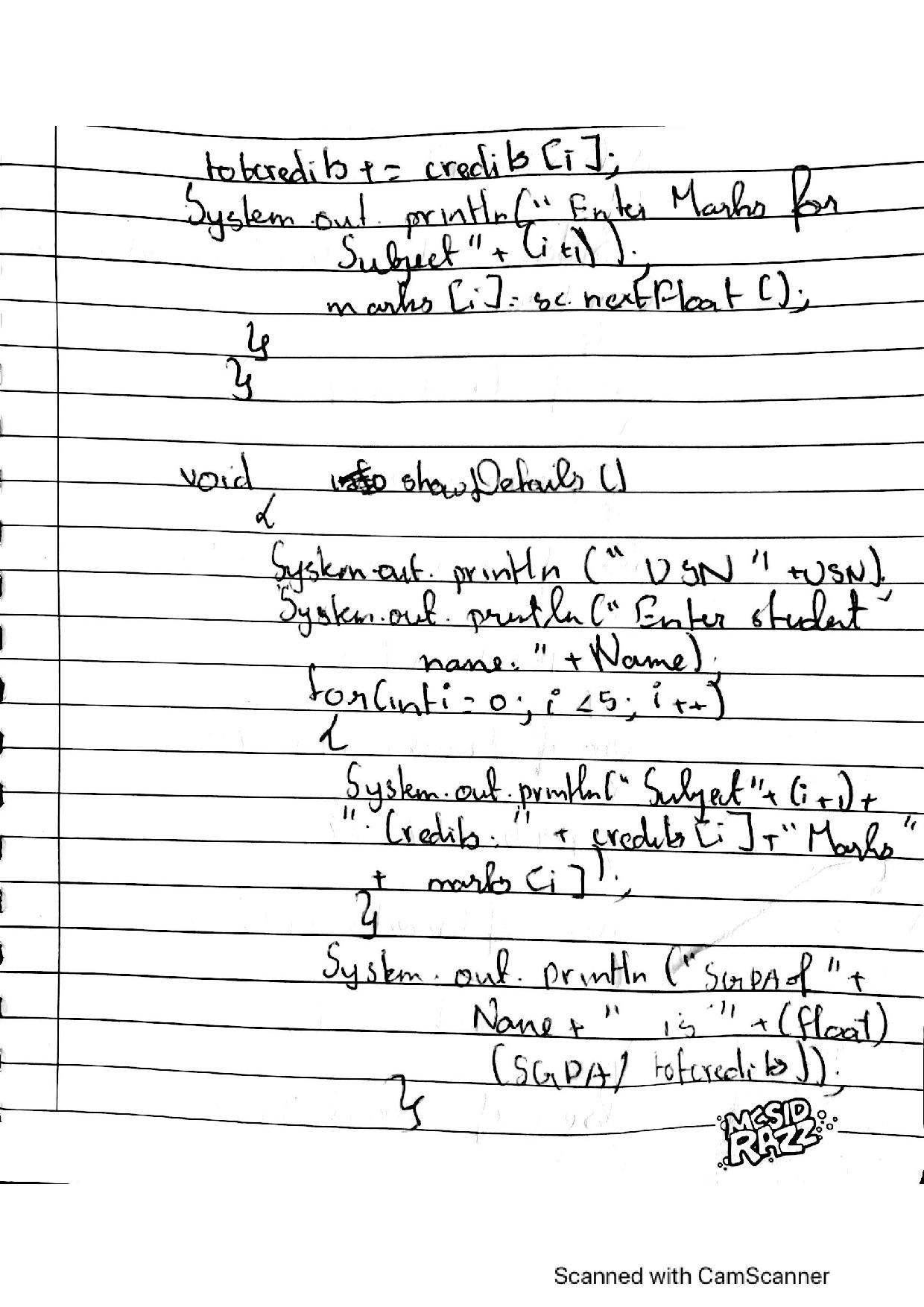
st1.showDetails();

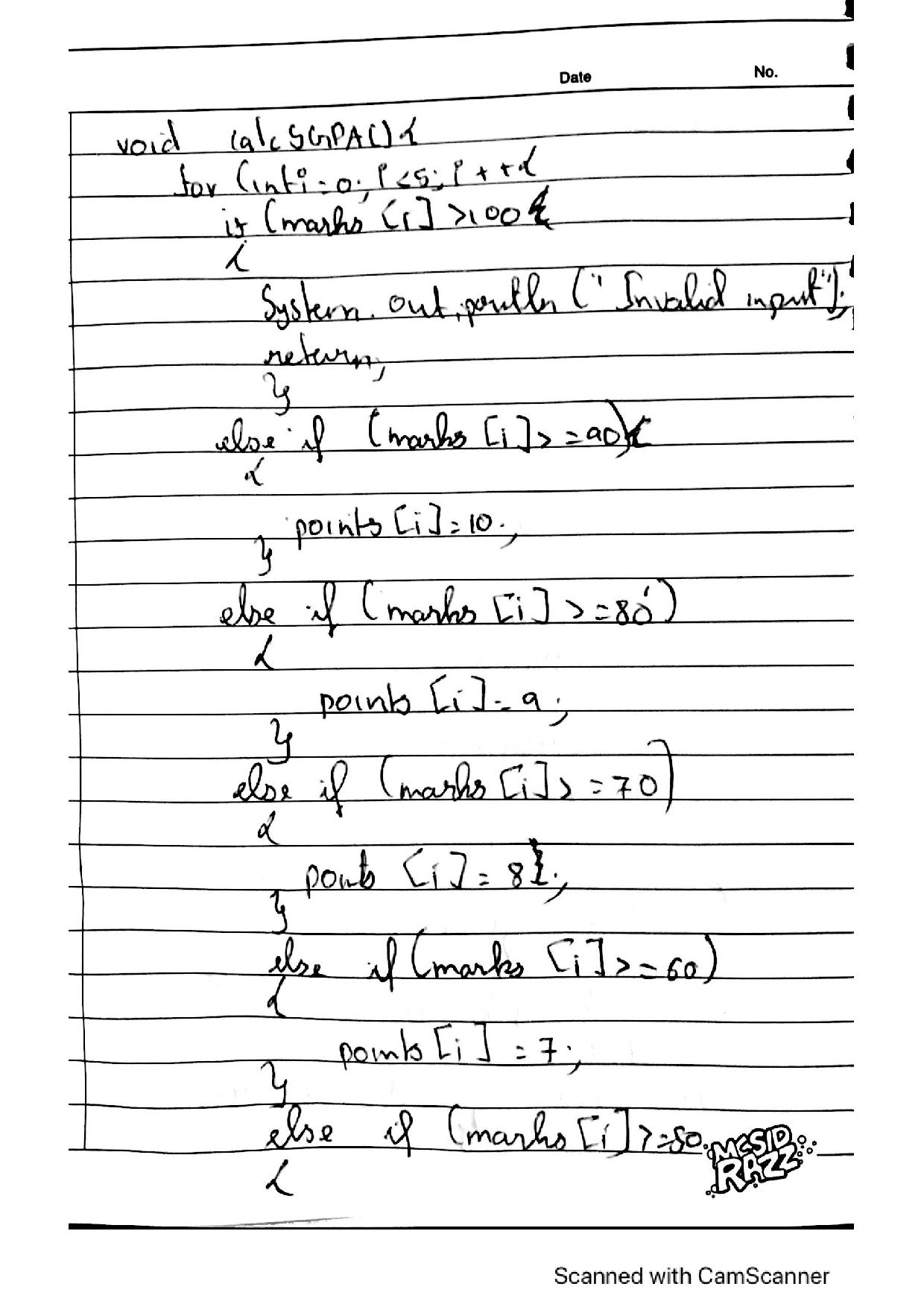
}

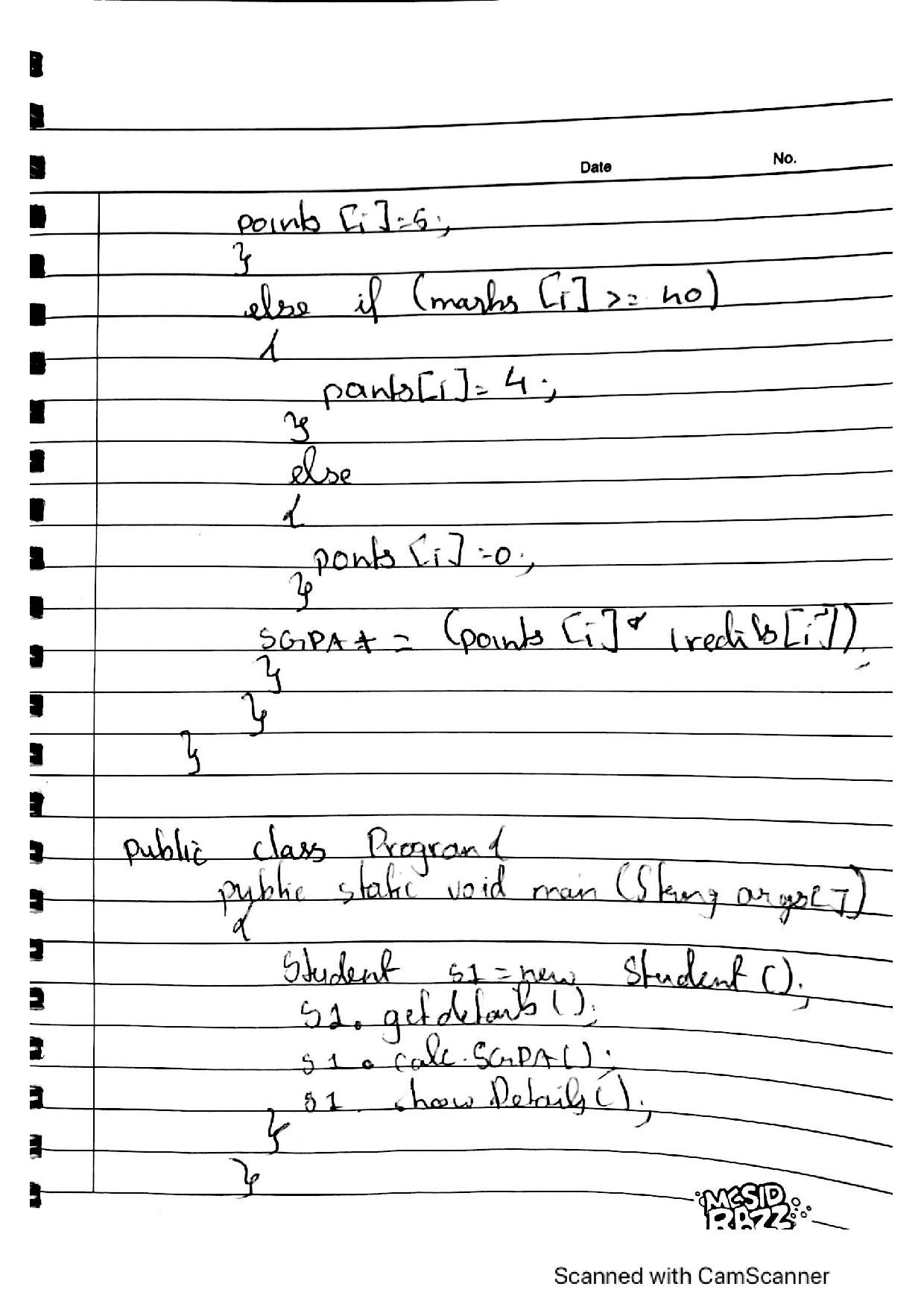
}











LAB 3:

import java.util.\*;

import java.lang.\*;

class Book {

String name, author;

double price;

int num\_pages;

Scanner in = new Scanner(System.in);

Book() {

System.out.println("Enter name of book: ");

name = in.nextLine();

System.out.println("Enter name of author: ");

author = in.nextLine();

System.out.println("Enter price of book in Rs: ");

price = in.nextDouble();

System.out.println("Enter number of pages in the book: ");

num\_pages = in.nextInt();

}

void show() {

System.out.println("Name: " + name);

System.out.println("Author: " + author);

System.out.println("Price: " + price);

System.out.println("Number of pages: " + num\_pages);

}

public String toString() {

return name + ", By " + author + " for Rs." + price + " and has " + num\_pages + " pages";

}

public static void main(String[] args) {

Scanner in = new Scanner(System.in);

int n, x;

System.out.println("Enter number of books to be created: ");

n = in.nextInt();

Book B[] = new Book[n];

for(int i = 0; i < n; i++) {

System.out.println("Book " + (i+1));

B[i] = new Book();

System.out.println();

}

for(int i = 0; i < n; i++) {

System.out.println("Book " + (i+1));

System.out.println(B[i]);

System.out.println();

}

do {

System.out.println("Enter the book number whose details you want to display: ");

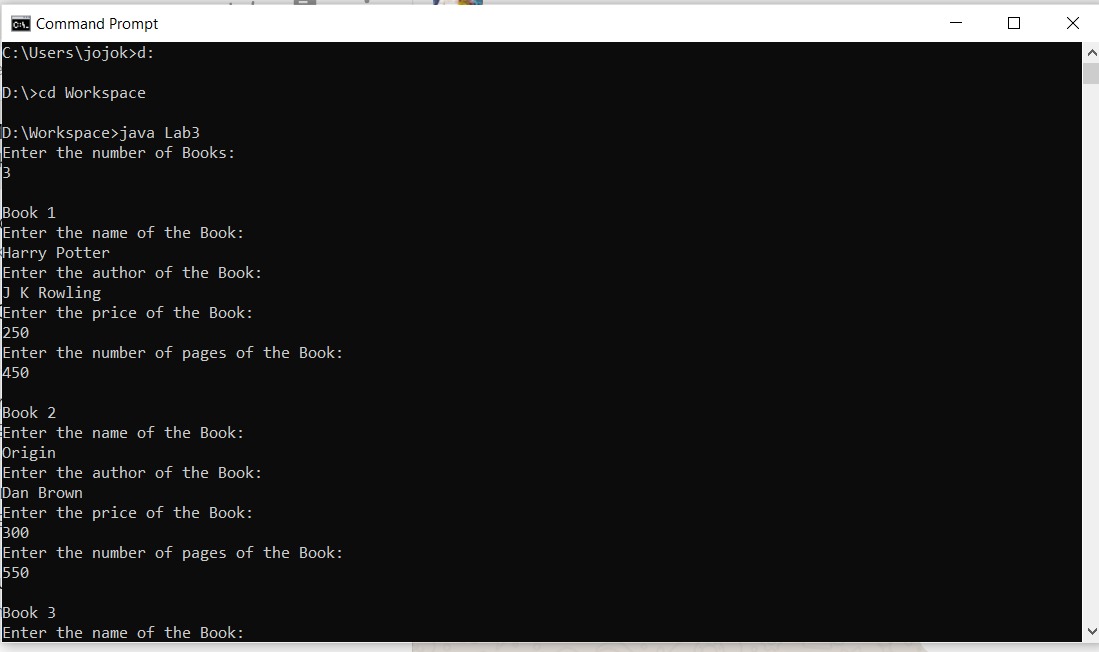
x = in.nextInt();

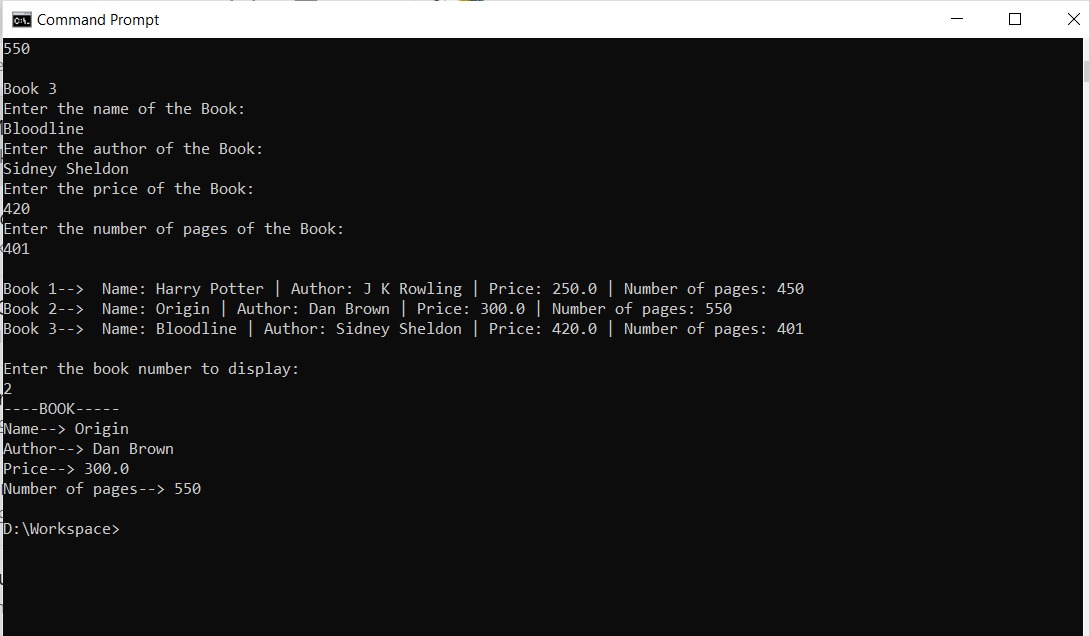
} while(x < 1 && x > n);

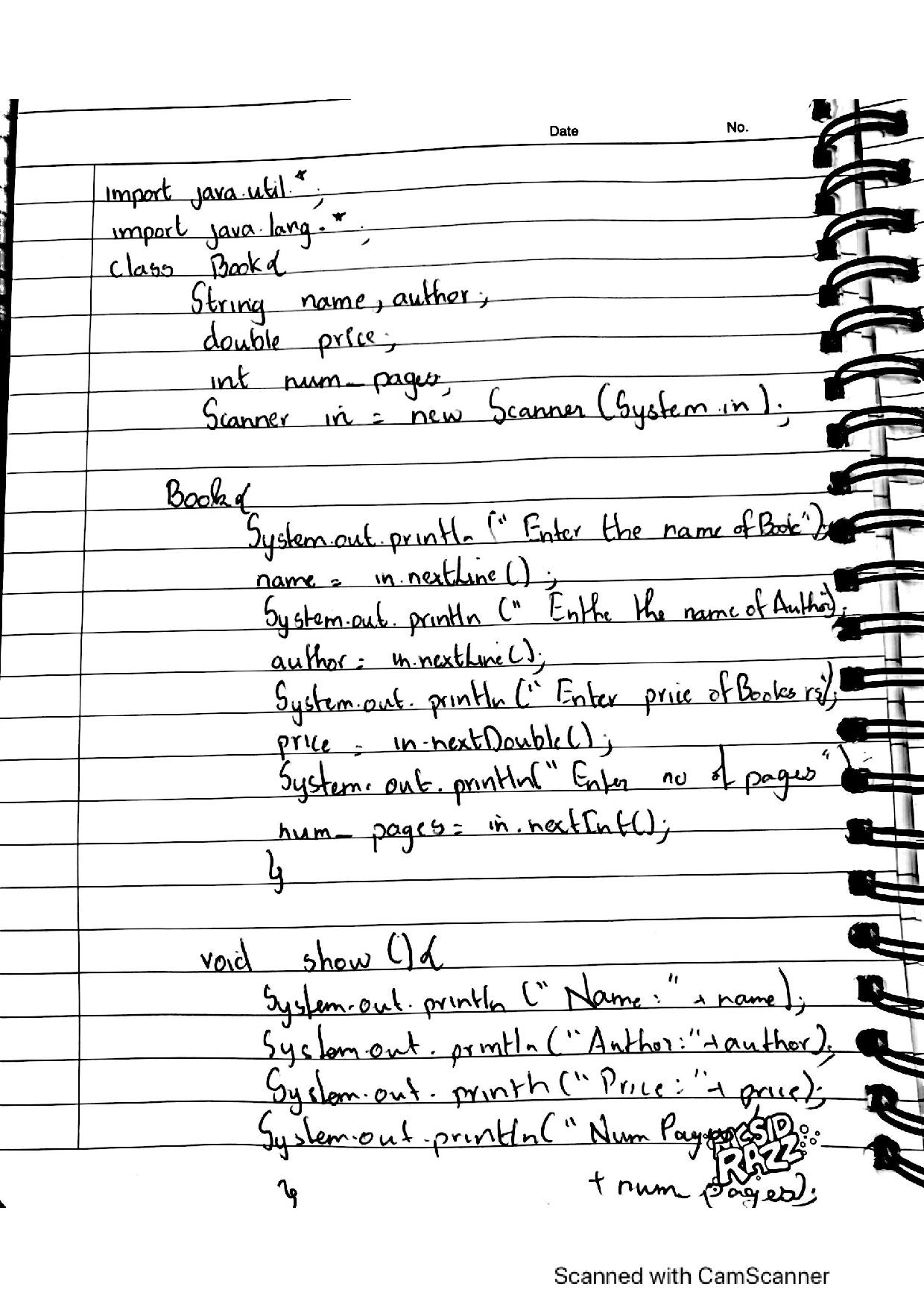
B[x-1].show();

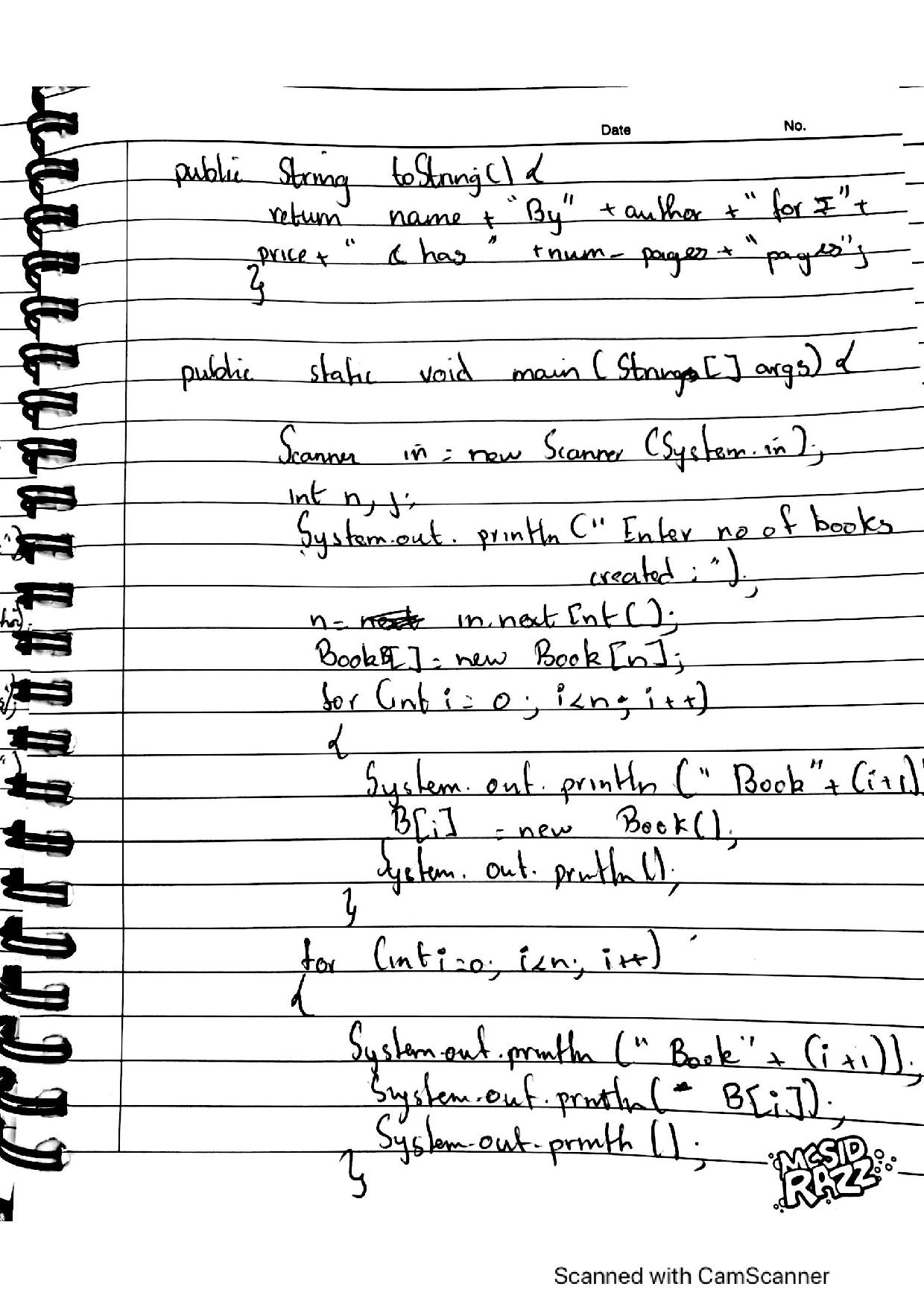
}

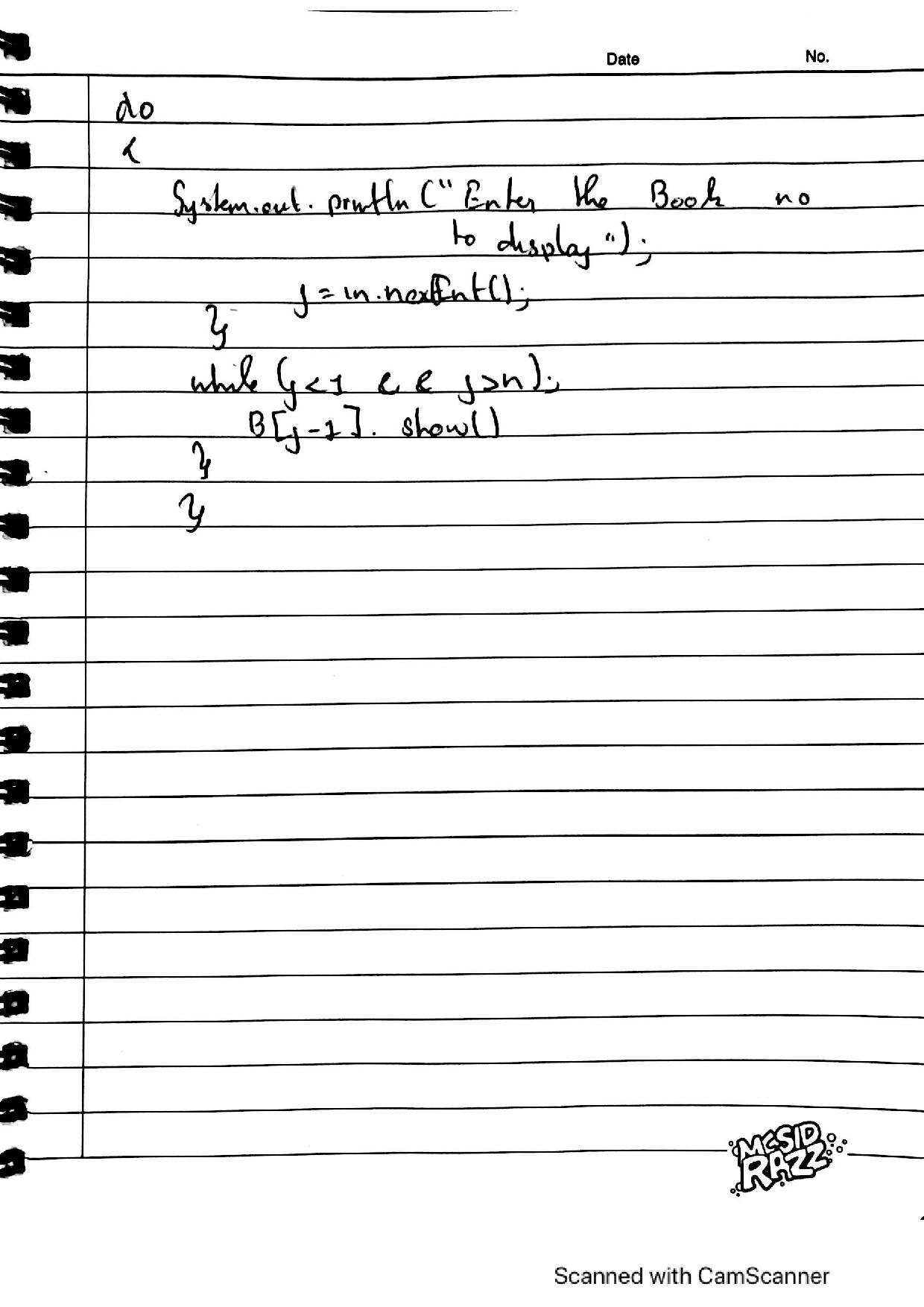
}











LAB 4:

import java.util.\*;

import java.lang.\*;

abstract class Shape{

Scanner in = new Scanner(System.in);

int x1, x2;

Shape(){

System.out.println("Enter two numbers:");

System.out.println("");

x1=in.nextInt();

x2=in.nextInt();

}

abstract void printarea();

}

class Rectangle extends Shape{

void printarea(){

System.out.println("Area of Rectangle: " + (x1 \* x2));

}

}

class Triangle extends Shape{

void printarea(){

System.out.println("Area of Triangle: " + (x1 \* x2)/2);

}

}

class Circle extends Shape{

void printarea(){

System.out.println("Area of Circle 1: " + (3.14 \* x1 \* x1));

System.out.println("Area of Circle 2: " + (3.14 \* x2 \* x2));

}

}

class Abstract{

public static void main(String[]args){

Shape s;

s = new Rectangle();

s.printarea();

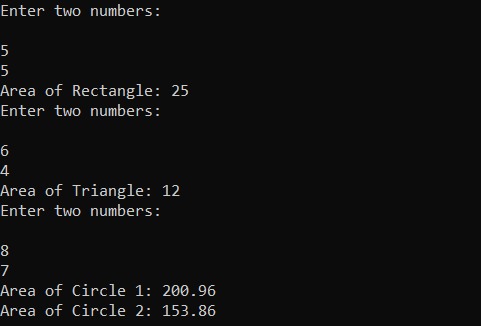
s = new Triangle();

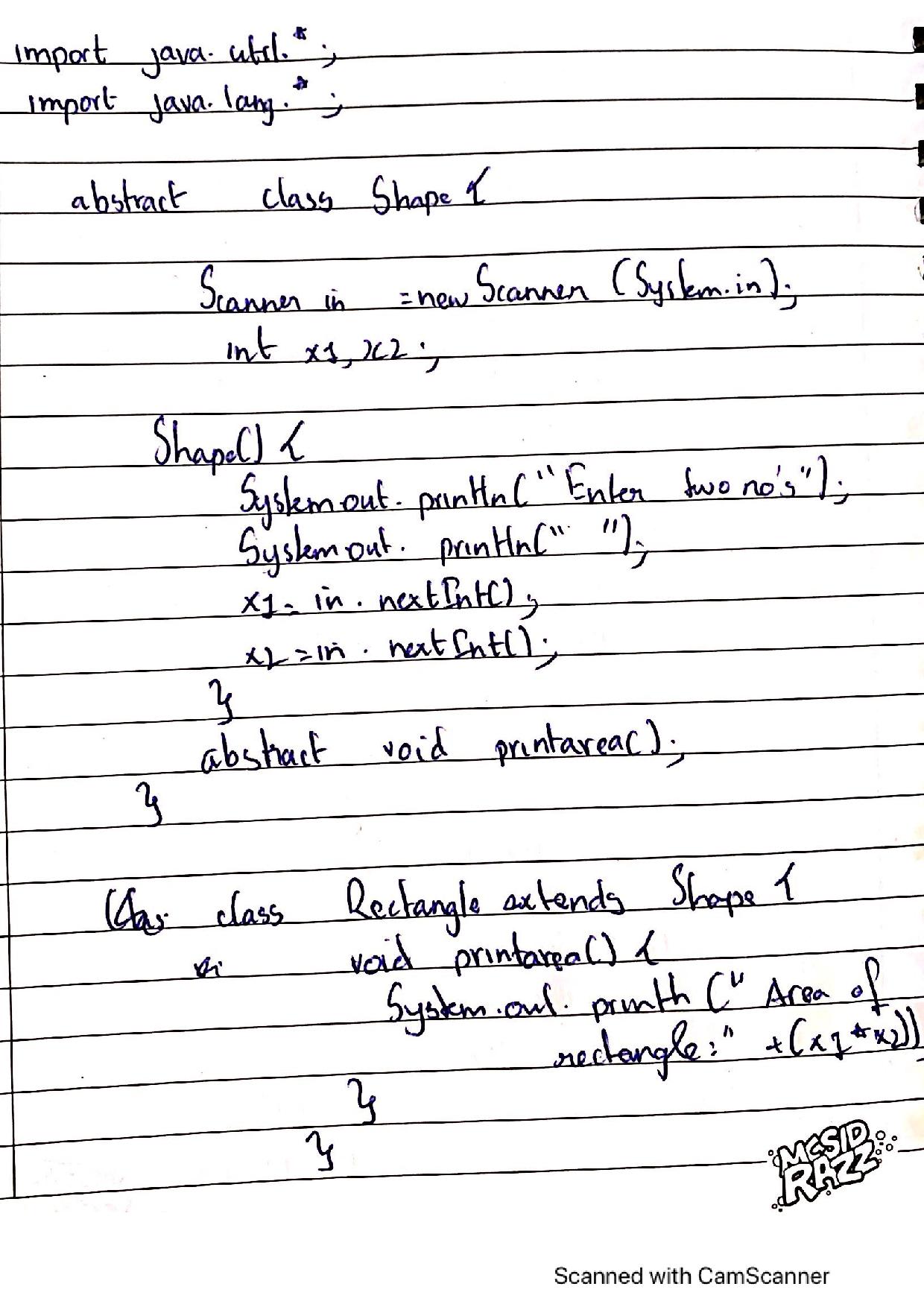
s.printarea();

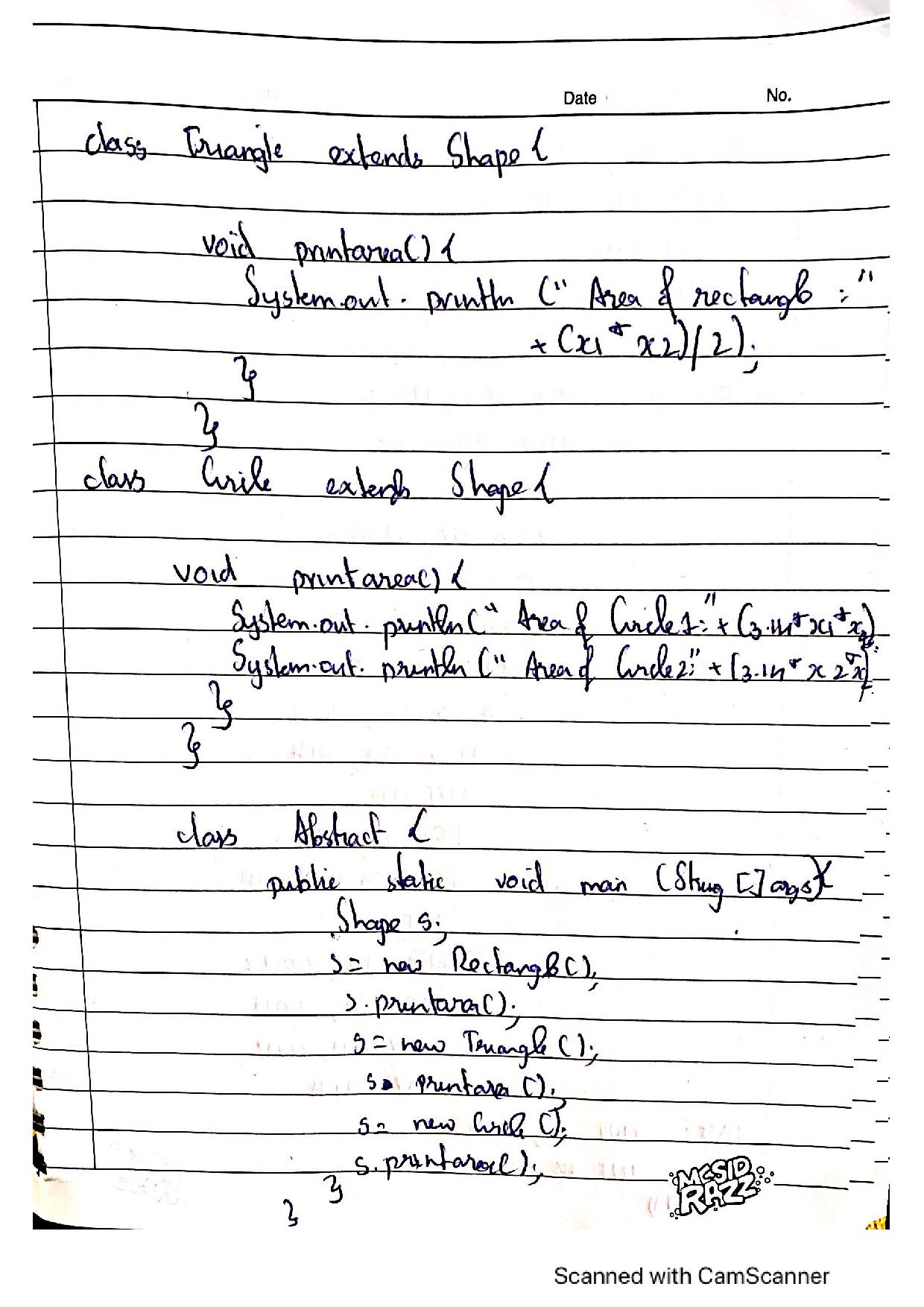
s = new Circle();

s.printarea();

}

}





LAB 5:

import java.util.\*;

import java.lang.\*;

class Account {

String name, abc;

int accNo;

char accType;

double bal = 0;

double deposit;

Scanner in = new Scanner(System.in);

void input\_data() {

System.out.println("Enter your account type (S/C):");

abc = in.nextLine();

accType = abc.charAt(0);

}

void deposit() {

System.out.println("Enter an amount to deposit: ");

deposit = in.nextDouble();

bal += deposit;

System.out.println("Balance has been updated. ");

}

void view\_balance() {

System.out.println("Balance = " + bal);

}

public static void main(String[] args) {

Scanner s = new Scanner(System.in);

int x;

Account a1 = new Account();

a1.input\_data();

if(a1.accType == 'C' || a1.accType == 'c'){

Current a2 = new Current();

do {

System.out.println("WELCOME TO YOUR CURRENT ACCOUNT");

System.out.println("1. Deposit ");

System.out.println("2. Check Balance ");

System.out.println("3. Issue Cheque ");

System.out.println("4. Exit");

System.out.println("Enter your choice: ");

x = s.nextInt();

switch(x) {

case 1: a2.deposit();

break;

case 2: a2.check\_balance();

break;

case 3: a2.issue\_cheque();

break;

case 4: System.exit(0);

break;

default: System.out.println("ERROR. INVALID CHOICE.");

}

} while(x <= 4 && x >= 1);

}

else if (a1.accType == 'S' || a1.accType == 's'){

Savings a3 = new Savings();

do {

System.out.println("WELCOME TO YOUR SAVINGS ACCOUNT");

System.out.println("1. Deposit");

System.out.println("2. View Balance");

System.out.println("3. Withdraw ");

System.out.println("4. Calculate compound interest ");

System.out.println("5. Exit ");

System.out.println("Enter your choice: ");

x = s.nextInt();

switch(x) {

case 1: a3.deposit();

break;

case 2: a3.view\_balance();

break;

case 3: a3.withdraw\_balance();

break;

case 4: a3.compute\_CI();

break;

case 5: System.exit(0);

break;

default: System.out.println("ERROR. INVALID CHOICE.");

}

} while(x <= 5 && x >=1);

}

else System.out.println("INVALID ACCOUNT TYPE");

}

}

class Current extends Account {

Current() {

System.out.println("Enter your name: ");

name = in.nextLine();

System.out.println("Enter your account number: ");

accNo = in.nextInt();

deposit();

}

double chq\_amount;

void issue\_cheque() {

System.out.println("Enter amount for which cheque is to be issued.");

chq\_amount = in.nextDouble();

if(chq\_amount > bal) {

System.out.println("ERROR! Insufficient balance in account.");

}

else {

bal -= chq\_amount;

System.out.println("Cheque has been issued SUCCESSFULLY");

}

}

void check\_balance() {

if(bal < 1000) {

System.out.println("Current available balance is lesser than minimum required balance.");

bal -= 100;

System.out.println("Service charge of Rs.100 has been deducted from your balance.");

}

view\_balance();

}

}

class Savings extends Account {

double CI, withdrawal\_ammount, time;

Savings() {

System.out.println("Enter your name: ");

name = in.nextLine();

System.out.println("Enter your account number: ");

accNo = in.nextInt();

deposit();

}

void compute\_CI() {

System.out.println("Enter time period: ");

time = in.nextInt();

CI = bal \* Math.pow(1 + (0.08 / 12), 12 \* time) - bal;

System.out.println("CI = " + CI);

bal += CI;

System.out.println("CI has been deposited");

}

void withdraw\_balance() {

System.out.println("Enter the amount you want to withdraw: ");

withdrawal\_ammount = in.nextDouble();

if(withdrawal\_ammount > bal) {

System.out.println("ERROR! THE ENTERED AMOUNT IS GREATER THAN THE AVAILABLE BALANCE...");

}

else {

bal -= withdrawal\_ammount;

System.out.println("AMOUNT HAS SUCCESSFULLY BEEN WITHDRAWN!");

}

}

}