

Group A

1. What is the String class in Java? Is String a data type?

Answer: In Java, a string is actually an object with methods that can manipulate strings in different ways. String is used to store texts and the characters will be surrounded by double quotes. All string literals in Java programs, such as "abc" are implemented as instances of this class. The String class represents character strings. Strings are constant; their values cannot be changed after they are created. So, string is data type in java.

2. How can you make a String upper case or lower case in Java?

Answer: The toUpperCase() method converts a string to upper case letters and the toLowerCase() method converts a string to lower case letters.

3. Can you use String in switch case in Java? Explain it briefly.

Answer: Yes, we can use a switch statement with Strings in Java. It is recommended to use String values in a switch statement if the data you are dealing with is also Strings. It provides an easy way to dispatch execution to different parts of code based on the value of the expression.

4. Explain different types of conditional statement in java.

Answer: Java has the following conditional statements:

- Use if to specify a block of code to be executed, if a specified condition is true.
- Use else to specify a block of code to be executed, if the same condition is false.
- Use else if to specify a new condition to test, if the first condition is false.

5. What is the value of the variable num after the following is executed?

- `int k = 5;`
- `int num = 0;`
- `int num1 = num + k * 2;`
- `int num2 = num + k * 2;`

Answer: The value of the variable num after the following is 0.

Are the values num1 and num2 equal after the last statement?

Answer: Yes, the values num1 and num2 are equal after the last statement.

6. How do you split a string in Java?

Answer: The string split() method breaks a given string around matches of the given regular expression. After splitting against the given regular expression, this method returns a string array.

7. How do you check if two Strings are equal in Java?

Answer: The equals() method compares two strings, and returns true if the strings are equal, and false if not.

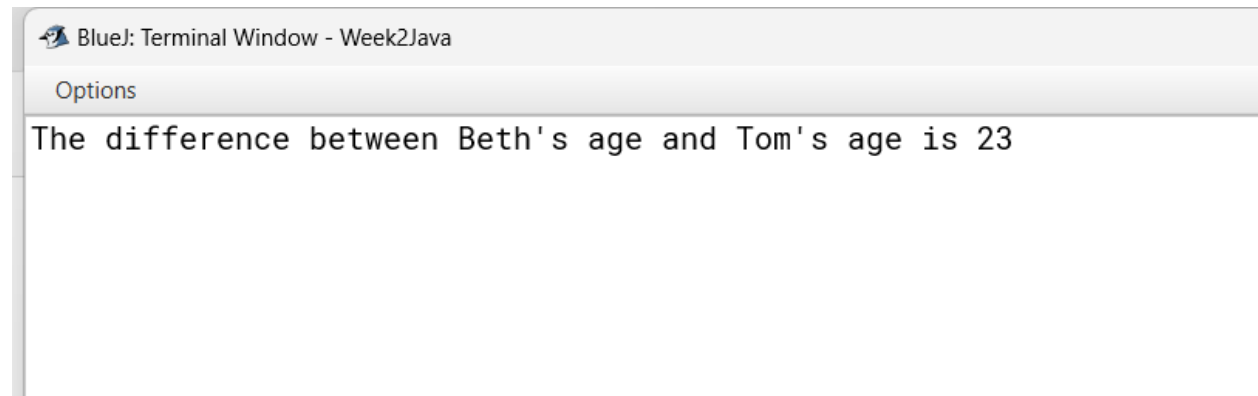
Group B

1. Find the difference between Beth's age (57) and Tom's age (34).

Answer:

```
public class Question1{  
    public static void main(String[] args){  
        int Beth = 57, Tom =34, Difference = 0;  
        Difference = Beth - Tom;  
        System.out.println("The difference between Beth's age and Tom's age is " + Difference);  
    }  
}
```

Result:



A terminal window titled "BlueJ: Terminal Window - Week2Java" with an "Options" button. The output text is "The difference between Beth's age and Tom's age is 23".

2. Develop a system to store your name as variable.

Answer:

```
import java.util.Scanner;  
public class NameAsVariable  
{  
    public static void main(String[] args){  
        String name = "Binod";  
        System.out.println("Your name is:" + name);  
    }  
}
```

Result:



A terminal window titled "BlueJ: Terminal Window - Week2Java" with an "Options" button. The output text is "Your name is:Binod".

3. Create the above java program in the java environment and then modify the program to use the following statements. Note down the response to each. Do they differ from what you would expect?

- ❖ `boolean result = true && true;`
- ❖ `boolean result = true && false || true;`
- ❖ `boolean result = false && false || true;`
- ❖ `boolean result = false && 0;`
- ❖ `boolean result = !(false) && true;`
- ❖ `boolean result = !(true && !(false &&`
- ❖ `false));`
- ❖ `boolean result = (10 > 14) and (4 == 5);`
- ❖ `boolean result = true && 5;`
- ❖ `boolean result = (3 * 4) != (14 - 2) && ('C' >= 'D');``boolean result = (12 * 2) == (3 * 8);`
- ❖ `boolean result = (14 * 2) != (3 * 8);`

Answer:



```
public class Main
{
    public static void main(String[] args) {
        int beth_age=57;
        int tom_age=34;
        int difference_in_age= beth_age- tom_age;
        System.out.println("the difference in age is"+" "+difference_in_age);
    }
}
```



```

import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        if (true && true){
            System.out.println("it is true");
        }
        else{
            System.out.println("it is false");
        }
    }
}

```



```

import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        if ((true && false || true)){
            System.out.println("it is true");
        }
        else{
            System.out.println("it is false");
        }
    }
}

```



```

import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        if ((false && false || true)){
            System.out.println("it is true");
        }
        else{
            System.out.println("it is false");
        }
    }
}

```



```

import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        if ((10 > 14) & (4 == 5)){
            System.out.println("it is true");
        }
        else{
            System.out.println("it is false");
        }
    }
}

```



```
import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        if ((12 * 2) == (3 * 8)){
            System.out.println("it is true");
        }
        else{
            System.out.println("it is false");
        }
    }
}
```



```
import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        if ((14 * 2) != (3 * 8)){
            System.out.println("it is true");
        }
        else{
            System.out.println("it is false");
        }
    }
}
```



```

import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        if (!(true && !(false && false))){
            System.out.println("it is true");
        }
        else{
            System.out.println("it is false");
        }
    }
}

```

4. Find the difference between 7 factorial and 5 factorial

Answer:



```

import java.util.Scanner;

public class Main
{
    public static void main(String[] args) {
        int Sevenfactorial=1*2*3*4*5*6*7;
        int sixfactorial=1*2*3*4*5*6;
        int diff=Sevenfactorial- sixfactorial;
        System.out.println("the difference is" +" "+diff);
    }
}

```

5. Complete the following questions by taking user input.

- o Write a Java program that prompts a user for their last name and stores it in a variable named last_name.
- o Give an instruction that prompts a user for their age and stores it as an integer in a variable named age.
- o Give an instruction that prompts a user for their temperature and stores it as a float in a variable named current_temperature.

Answer:

```
import java.util.Scanner;

public class Main
{
    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        System.out.print("input enter the last name:");
        String name=sc.nextLine();
        String last_name=name;

        System.out.println("the last name is" +" "+last_name);

    }
}
```



```
import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);

        System.out.println("enter the temaperature");
        float temaperature= sc.nextFloat();
        System.out.println("the temaperature "+temaperature+"is stored");

    }
}
```

6. Give a call to `printf` that is provided one string that displays the following address on three separate lines:

- o John Doe
- o 123 Dudley Street
- o 123 Dudley Street

Answer:

```
public class Main
{
    public static void main(String[] args) {
        System.out.printf("John %s%n", "Doe");
        System.out.printf("123 %s%n", "Dudley Street");
        System.out.printf("123 %s%n", "Dudley Street");
    }
}
```

7. Write a java program in which:

- a) The user enters either 'A', 'B', or 'C'. If 'A' is entered, the program should display the word 'Apple'; if 'B' is entered, it displays 'Banana'; and if 'C' is entered, it displays 'Coconut'. Use nested if statements for this.
- b) Repeat question (a) using an (if statement with "else if" pairs) instead.
- c) A student enters the number of college credits earned. If the number of credits is greater than or equal to 90, 'Senior Status' is displayed; if greater than or equal to 60, 'Junior Status' is displayed; if greater than or equal to 30, 'Sophomore Status' is displayed; else, 'Freshman Status' is displayed.

Answer:



```

import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        System.out.println("enter either a or b or c");
        String aplha= sc.nextLine();

        if (aplha.equals("a")){
            System.out.println("apple");
        }else if (aplha.equals("b")){
            System.out.println("banana");
        }else if (aplha.equals("c")){
            System.out.println("coconut");
        }else{
            System.out.println("nothing to print");
        }
    }
}

```



```

import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        System.out.println("enter either a or b or c");
        String aplha= sc.nextLine();

        if (aplha.equals("a")){
            System.out.println("apple");
        }else if (aplha.equals("b")){
            System.out.println("banana");
        }else if (aplha.equals("c")){
            System.out.println("coconut");
        }else{
            System.out.println("nothing to print");
        }
    }
}

```

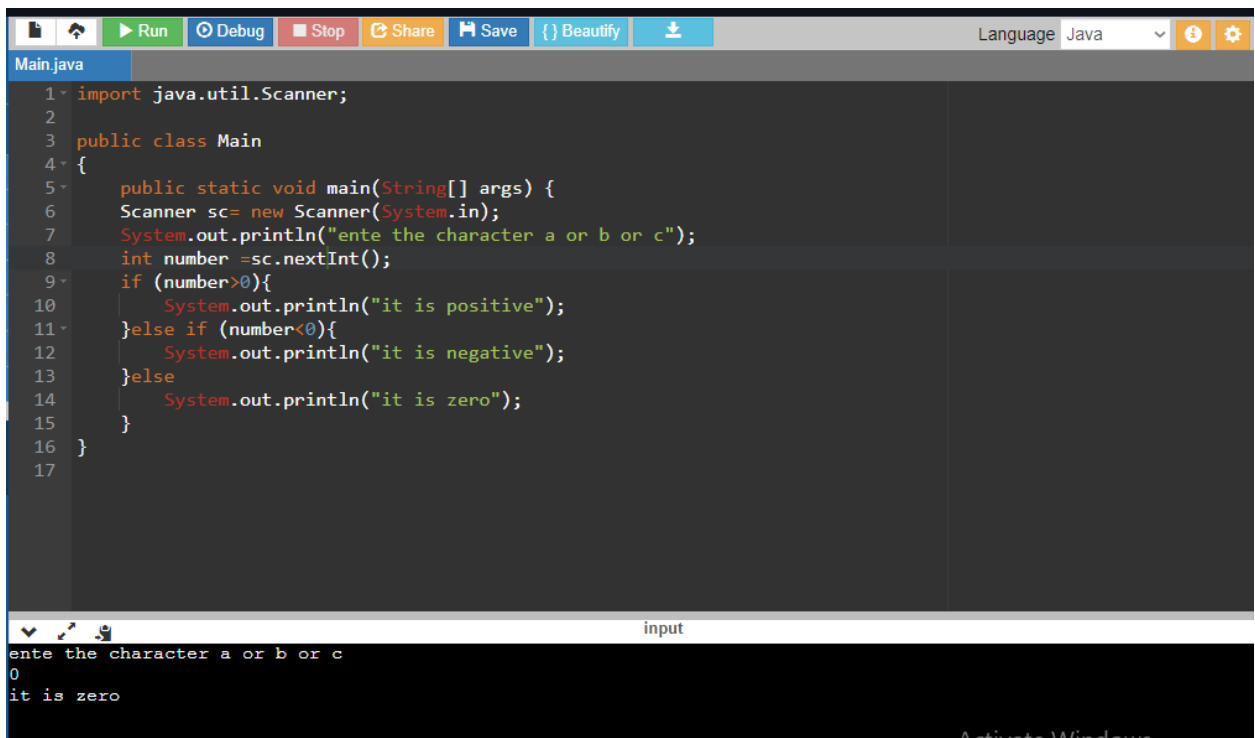


```
import java.util.Scanner;
public class Main
{
    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        System.out.println("enter the college credit earned");
        int a= sc.nextInt();

        if (a>=90){
            System.out.println("Senior status");
        }else if(a>=60){
            System.out.println("Junior status");
        }else if(a>=30){
            System.out.println("Sophomore status");
        }else{
            System.out.println("Freshman status");
        }
    }
}
```

Group C

1. Create a Java software that will ask the user for a number and then display whether it is positive or negative.



The screenshot shows an IDE window with a toolbar at the top containing icons for Run, Debug, Stop, Share, Save, and Beautify. The language is set to Java. The code in the editor is as follows:

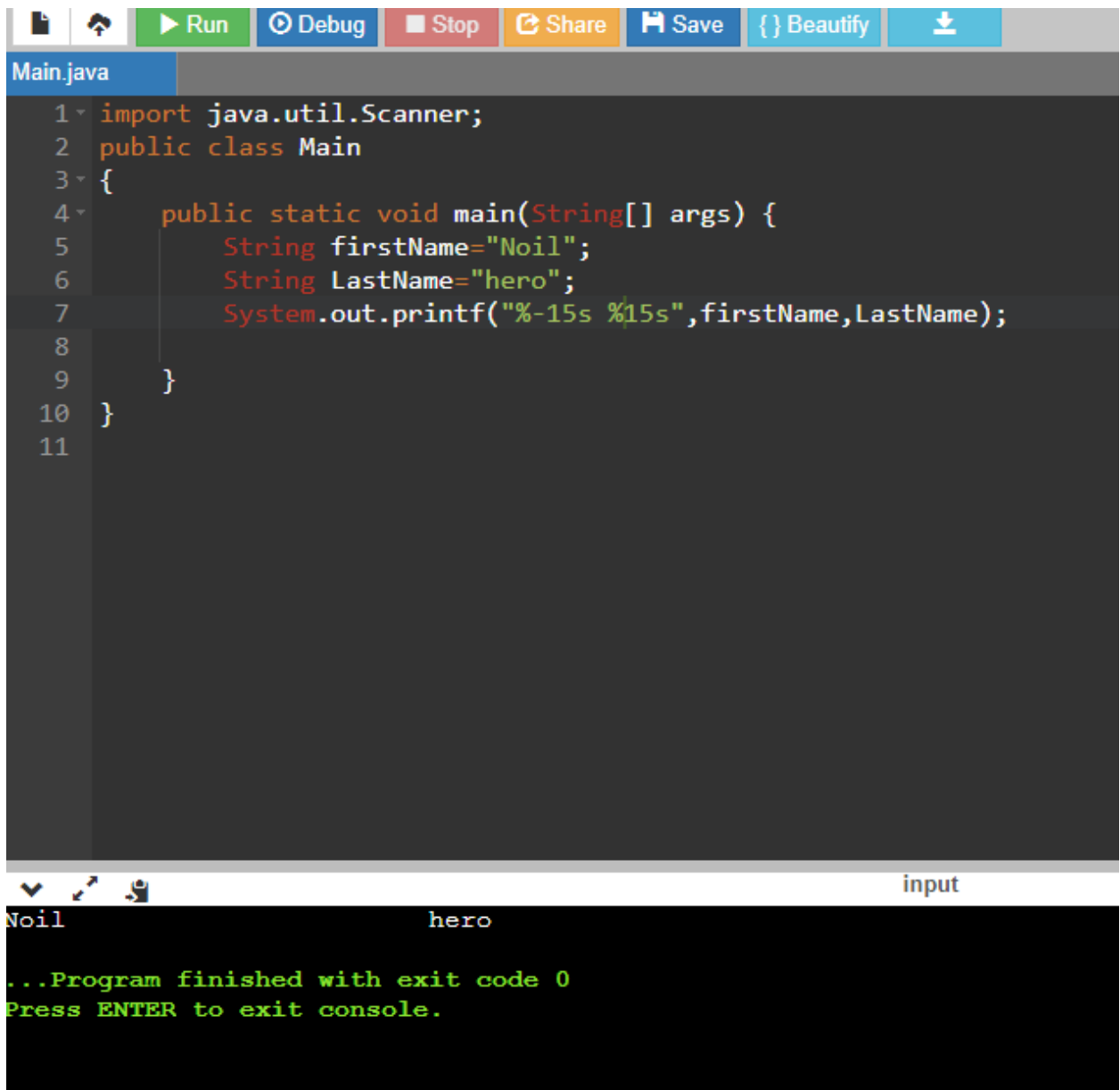
```
1 import java.util.Scanner;
2
3 public class Main
4 {
5     public static void main(String[] args) {
6         Scanner sc= new Scanner(System.in);
7         System.out.println("ente the character a or b or c");
8         int number =sc.nextInt();
9         if (number>0){
10             System.out.println("it is positive");
11         }else if (number<0){
12             System.out.println("it is negative");
13         }else
14             System.out.println("it is zero");
15     }
16 }
17
```

Below the code editor is a console window labeled 'input'. It displays the program's output:

```
ente the character a or b or c
0
it is zero
```

An 'Activate Windows' watermark is visible in the bottom right corner of the IDE window.

2. Your name left justified 15 spaces. [Formatted Output]

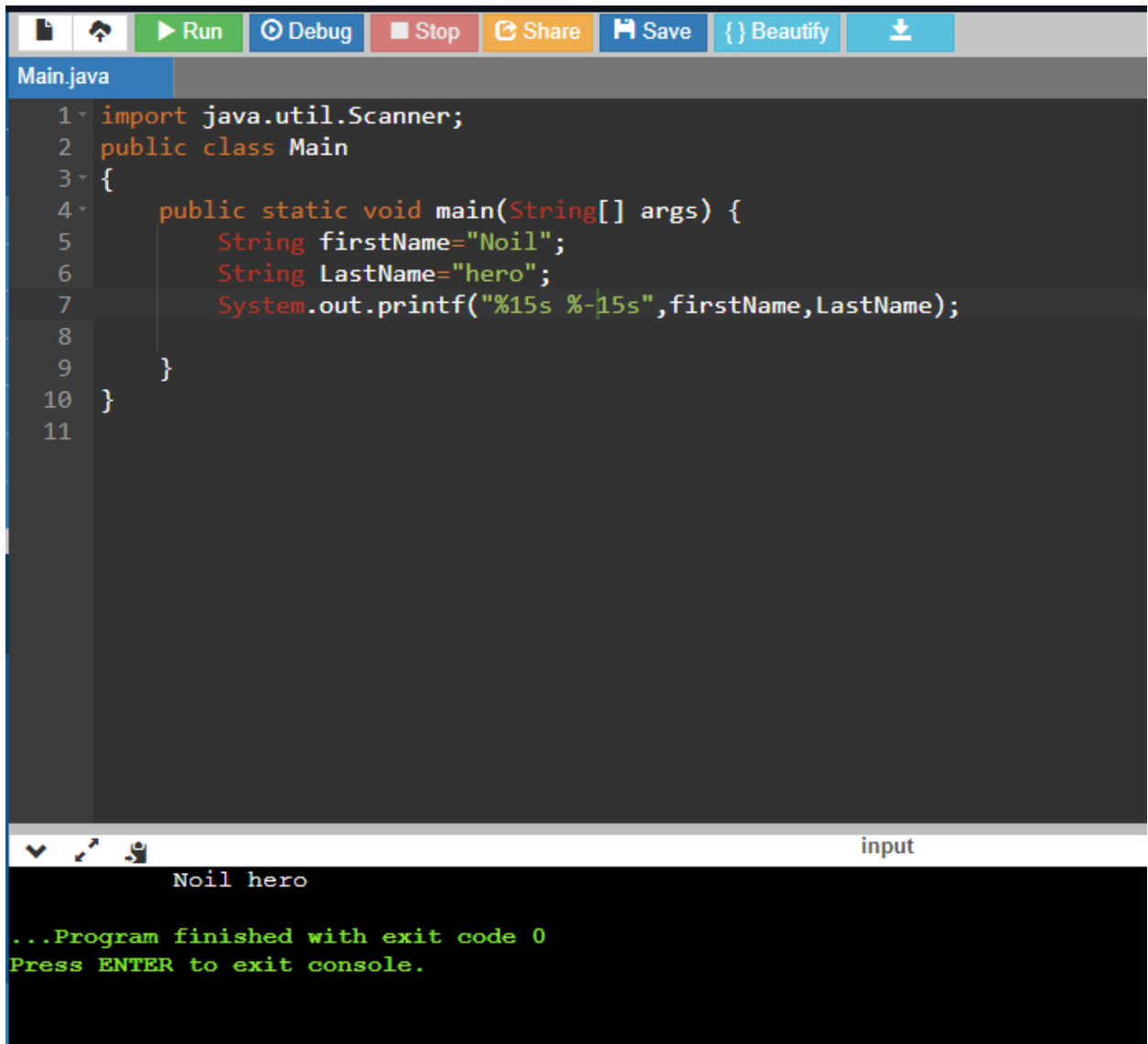


The image shows a Java IDE window titled 'Main.java'. The code is as follows:

```
1 import java.util.Scanner;
2 public class Main
3 {
4     public static void main(String[] args) {
5         String firstName="Noil";
6         String LastName="hero";
7         System.out.printf("%-15s %15s",firstName,LastName);
8     }
9 }
10
11
```

Below the code editor, there is a console window. It shows the output of the program: 'Noil' followed by 'hero'. The text 'Noil' is left-aligned, and 'hero' is right-aligned. Below the output, it says '...Program finished with exit code 0' and 'Press ENTER to exit console.'

3. Your name right justified 15 spaces. [Formatted Output]



The screenshot shows a Java IDE with a toolbar at the top containing icons for file operations, a 'Run' button, 'Debug', 'Stop', 'Share', 'Save', 'Beautify', and a download icon. The editor window is titled 'Main.java' and contains the following code:









```
1 import java.util.Scanner;
2 public class Main
3 {
4     public static void main(String[] args) {
5         String firstName="Noil";
6         String LastName="hero";
7         System.out.printf("%15s %-15s",firstName,LastName);
8     }
9 }
10
11
```

Below the editor is a console window with a title bar that includes a dropdown menu, a cursor icon, and a magnifying glass icon, followed by the label 'input'. The console output is as follows:

```
Noil hero

...Program finished with exit code 0
Press ENTER to exit console.
```




4. There were bunch of students who were curious about their total marks, percentage and grade using the marks from five subjects as input. Develop a system to help them find their grades.



RunDebugStopShareSaveBeautifyDownload

Main.java

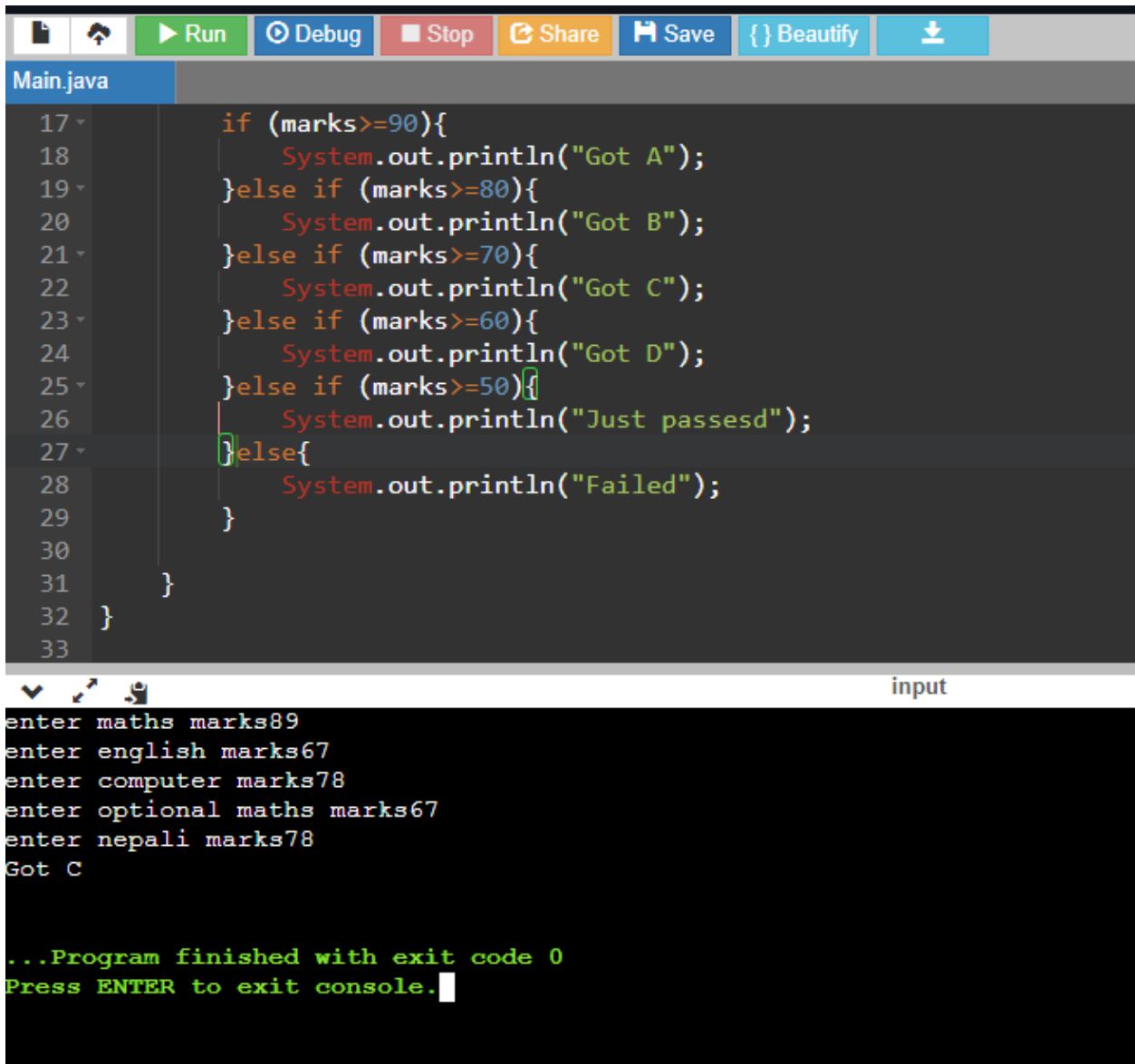
```
1 import java.util.Scanner;
2 public class Main
3 {
4     public static void main(String[] args) {
5         Scanner sc= new Scanner(System.in);
6         System.out.print("enter maths marks");
7         int m= sc.nextInt();
8         System.out.print("enter english marks");
9         int e= sc.nextInt();
10        System.out.print("enter computer marks");
11        int c= sc.nextInt();
12        System.out.print("enter optional maths marks");
13        int opt= sc.nextInt();
14        System.out.print("enter nepali marks");
15        int n= sc.nextInt();
16        double marks=((m+e+c+opt+n)/5);
17        if (marks>=90){
```



input

```
enter maths marks89
enter english marks67
enter computer marks78
enter optional maths marks67
enter nepali marks78
Got C

...Program finished with exit code 0
Press ENTER to exit console.
```



The screenshot shows an IDE window titled 'Main.java' with a Java program. The program uses a series of if-else statements to check marks for different subjects and print a result. The console output shows the program being run with sample data, resulting in 'Got C'.

```
17 if (marks>=90){
18     System.out.println("Got A");
19 }else if (marks>=80){
20     System.out.println("Got B");
21 }else if (marks>=70){
22     System.out.println("Got C");
23 }else if (marks>=60){
24     System.out.println("Got D");
25 }else if (marks>=50){
26     System.out.println("Just passed");
27 }else{
28     System.out.println("Failed");
29 }
30
31 }
32 }
33
```

input

```
enter maths marks89
enter english marks67
enter computer marks78
enter optional maths marks67
enter nepali marks78
Got C

...Program finished with exit code 0
Press ENTER to exit console.
```

5. Write a Java program that allows the user to enter two integer values and displays the results with the following arithmetic operators applied to them. For example, if the user enters the values 7 and 5, the output would be:

- o Addition: $7 + 5 = 12$
- o Subtraction: $7 - 5 = 2$
- o Multiplication: $7 * 5 = 35$
- o Division: $7 / 5 = 1.40$
- o Modulus: $7 \% 5 = 2$

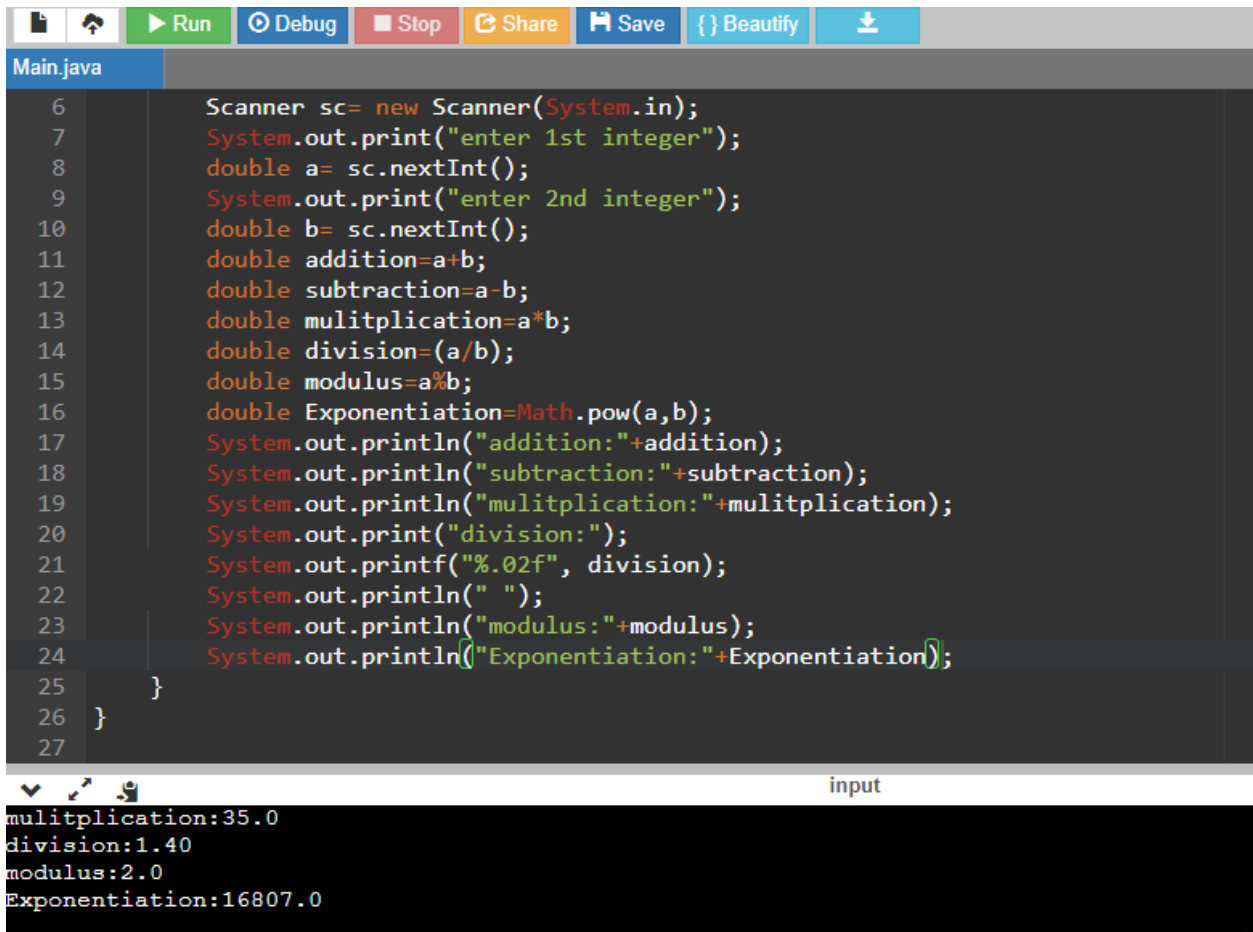
o Exponentiation: $7 ** 5 = 16,807$

[All floating-point results should be displayed with two decimal places of accuracy and with commas where appropriate.]

```
Main.java
1 import java.util.Scanner;
2 public class Main
3 {
4     public static void main(String[] args) {
5         Scanner sc= new Scanner(System.in);
6         System.out.print("enter 1st integer");
7         double a= sc.nextInt();
8         System.out.print("enter 2nd integer");
9         double b= sc.nextInt();
10        double addition=a+b;
11        double subtraction=a-b;
12        double mulitplication=a*b;
13        double division=(a/b);
14        double modulus=a%b;
15        double Exponentiation=Math.pow(a,b);
16        System.out.println("addition:"+addition);
17        System.out.println("subtraction:"+subtraction);
18        System.out.println("mulitplication:"+mulitplication);
19        System.out.print("division:");
20        System.out.printf("%.02f", division);
21        System.out.println(" ");
```

input

```
addition:12.0
subtraction:2.0
mulitplication:35.0
division:1.40
modulus:2.0
Exponentiation:16807.0
```



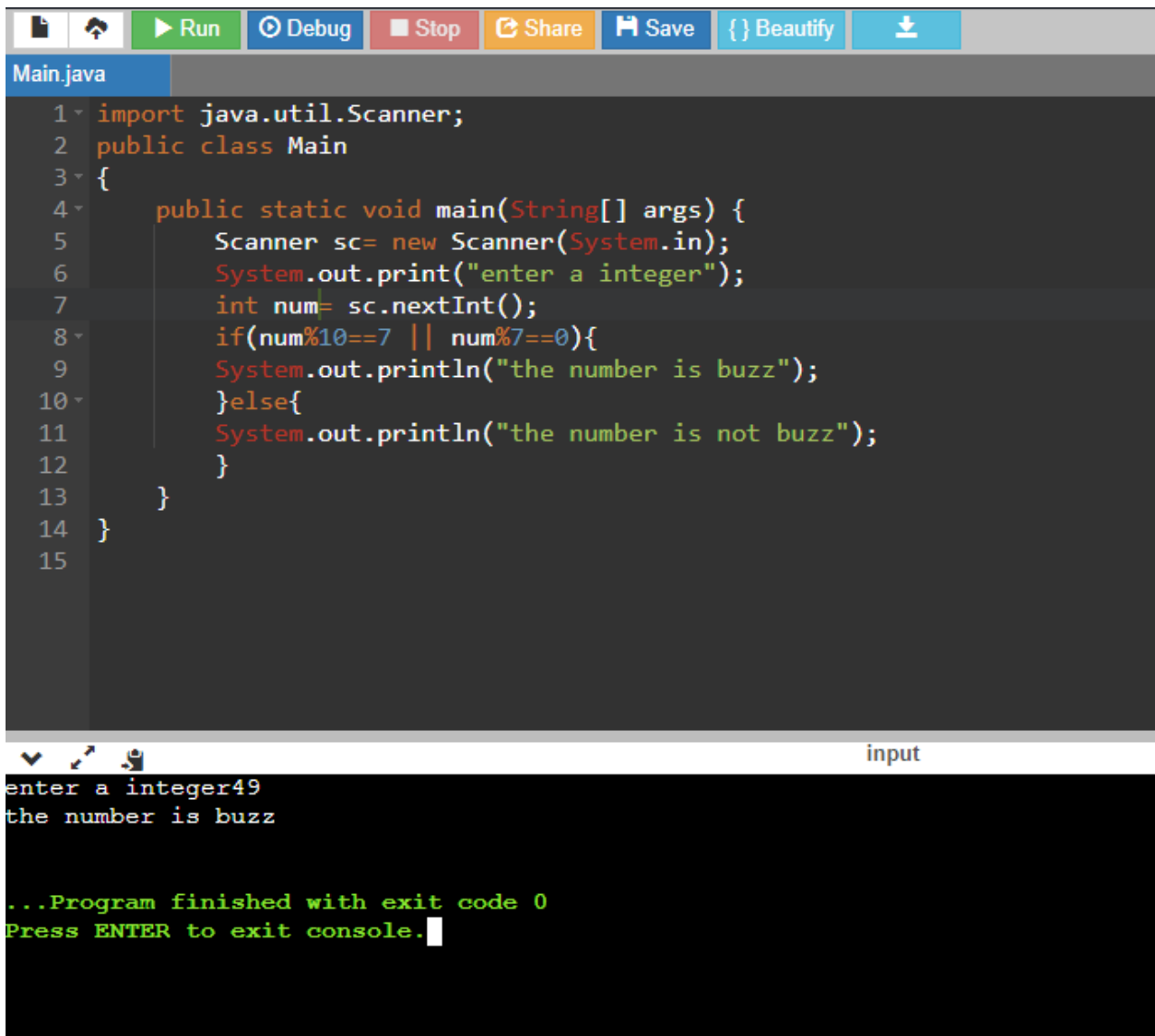
The image shows a screenshot of an IDE with a Java program in a file named 'Main.java'. The program uses a Scanner to take two integers as input and calculates addition, subtraction, multiplication, division, modulus, and exponentiation. The output is displayed in a terminal window below the code editor.

```
6 Scanner sc= new Scanner(System.in);
7 System.out.print("enter 1st integer");
8 double a= sc.nextInt();
9 System.out.print("enter 2nd integer");
10 double b= sc.nextInt();
11 double addition=a+b;
12 double subtraction=a-b;
13 double mulitplication=a*b;
14 double division=(a/b);
15 double modulus=a%b;
16 double Exponentiation=Math.pow(a,b);
17 System.out.println("addition:"+addition);
18 System.out.println("subtraction:"+subtraction);
19 System.out.println("mulitplication:"+mulitplication);
20 System.out.print("division:");
21 System.out.printf("%.02f", division);
22 System.out.println(" ");
23 System.out.println("modulus:"+modulus);
24 System.out.println("Exponentiation:"+Exponentiation);
25 }
26 }
27
```

input

```
mulitplication:35.0
division:1.40
modulus:2.0
Exponentiation:16807.0
```

6. Let's create a java program to input a number and check whether it is a Buzz number or not. A number is said to be a buzz number when it ends with 7 or is divisible by 7.



The image shows a screenshot of an IDE with a Java file named 'Main.java'. The code is as follows:

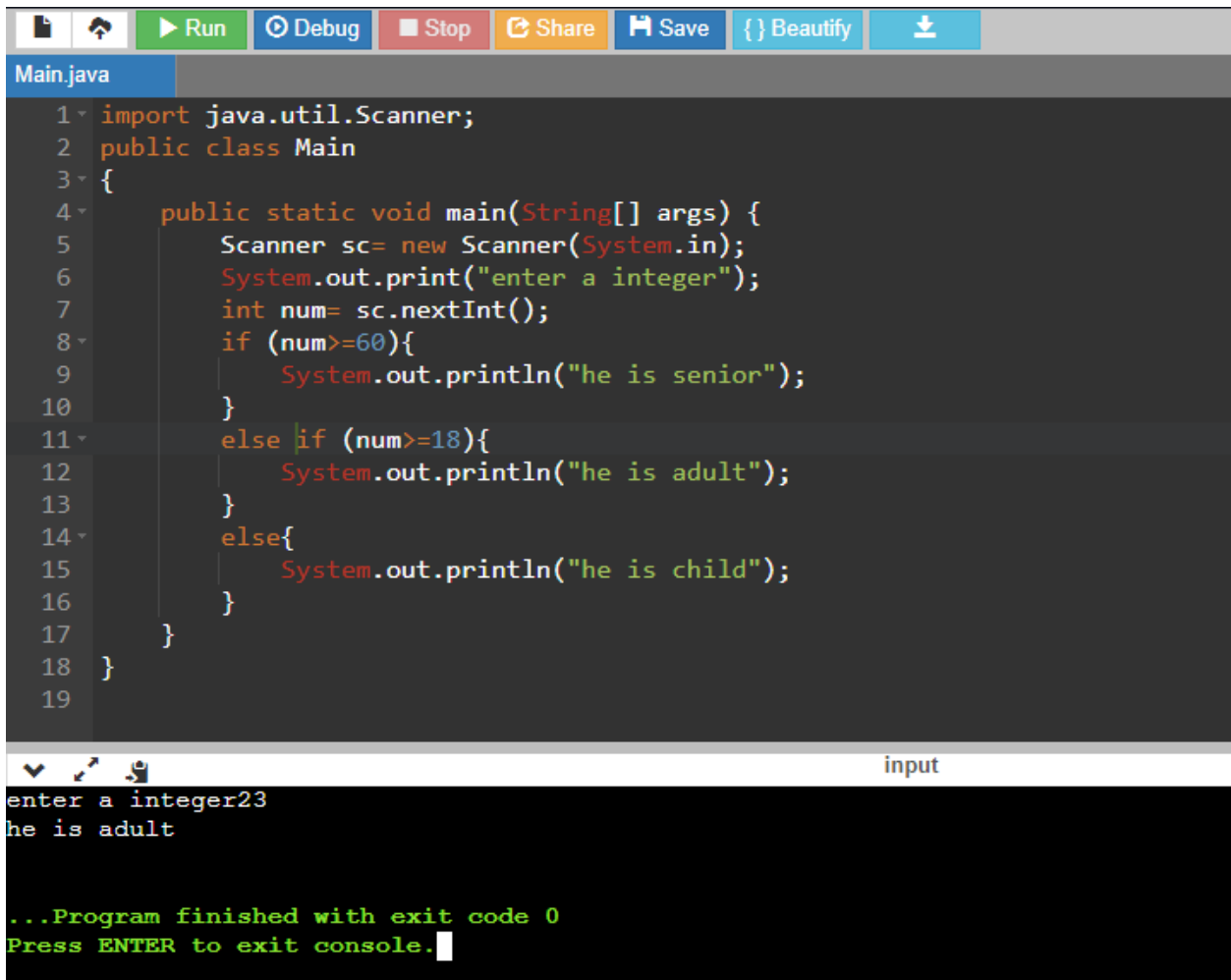
```
1 import java.util.Scanner;
2 public class Main
3 {
4     public static void main(String[] args) {
5         Scanner sc= new Scanner(System.in);
6         System.out.print("enter a integer");
7         int num= sc.nextInt();
8         if(num%10==7 || num%7==0){
9             System.out.println("the number is buzz");
10        }else{
11            System.out.println("the number is not buzz");
12        }
13    }
14 }
15
```

Below the code editor, the console output is shown. The user entered '49', and the program printed 'the number is buzz'. The console also shows the program finished with exit code 0 and a prompt to press ENTER to exit the console.

```
enter a integer49
the number is buzz

...Program finished with exit code 0
Press ENTER to exit console.
```

7. Let's take an example program where we will take the age of user as input and find whether he is a child, adult, or senior on the basis of age. Using Java if-else-if ladder statements.



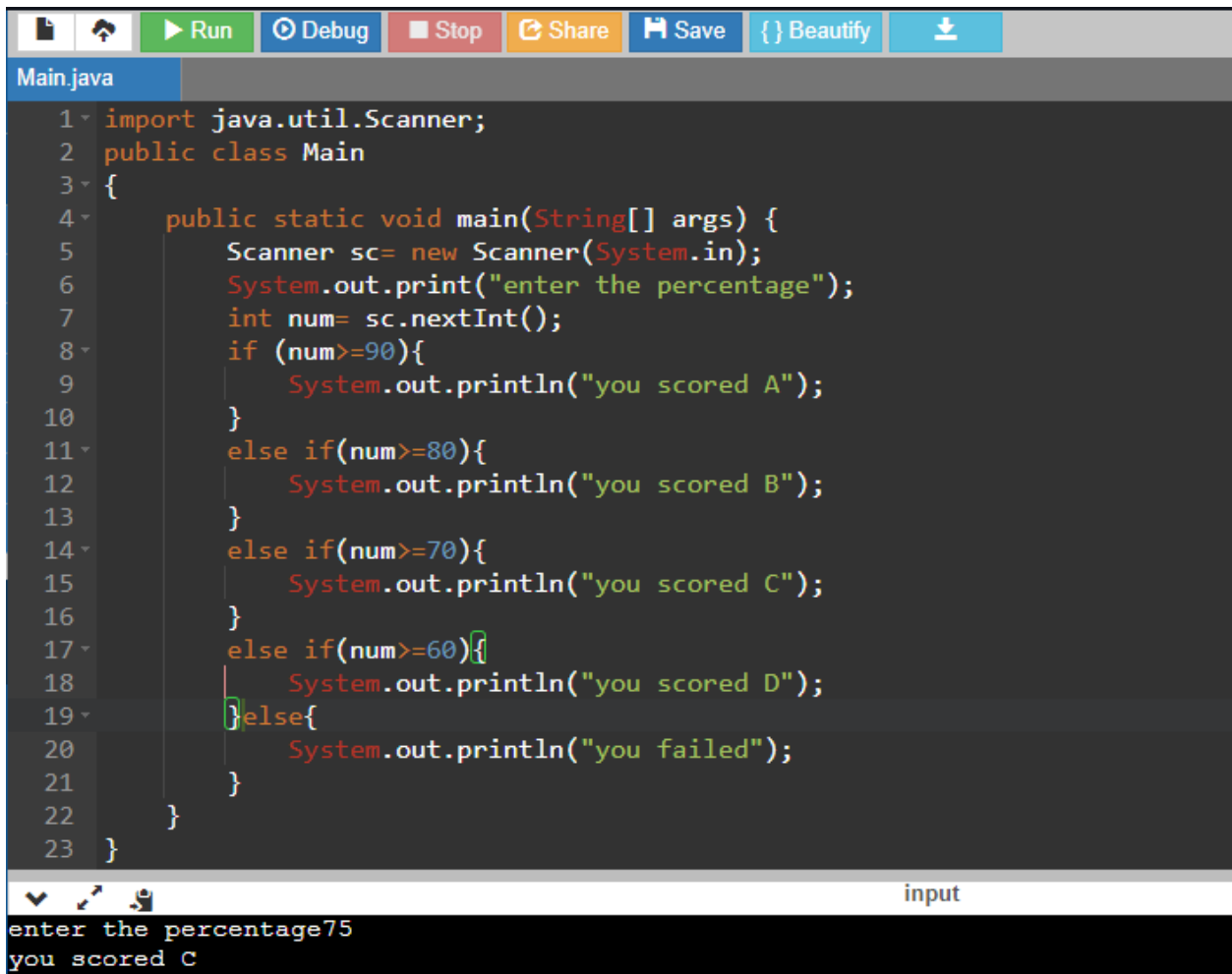
```
1 import java.util.Scanner;
2 public class Main
3 {
4     public static void main(String[] args) {
5         Scanner sc= new Scanner(System.in);
6         System.out.print("enter a integer");
7         int num= sc.nextInt();
8         if (num>=60){
9             System.out.println("he is senior");
10        }
11        else if (num>=18){
12            System.out.println("he is adult");
13        }
14        else{
15            System.out.println("he is child");
16        }
17    }
18 }
19
```

input

```
enter a integer23
he is adult

...Program finished with exit code 0
Press ENTER to exit console.
```

8. Bruno Mars just appeared his examination and got 75%. He goes to his tutor and asks his grade. Now being a tutor you need to develop a program which tells his grade.

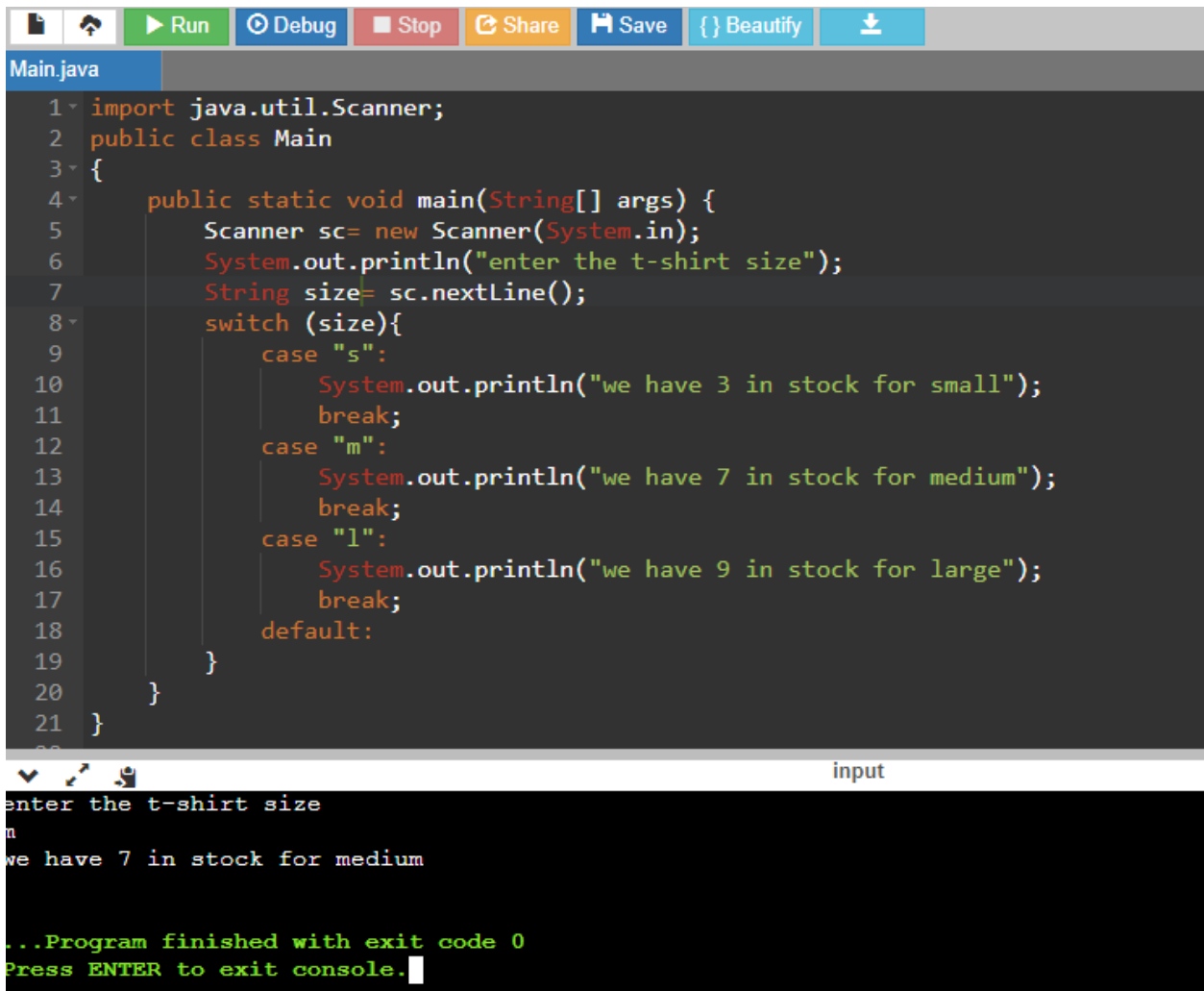


```
1 import java.util.Scanner;
2 public class Main
3 {
4     public static void main(String[] args) {
5         Scanner sc= new Scanner(System.in);
6         System.out.print("enter the percentage");
7         int num= sc.nextInt();
8         if (num>=90){
9             System.out.println("you scored A");
10        }
11        else if(num>=80){
12            System.out.println("you scored B");
13        }
14        else if(num>=70){
15            System.out.println("you scored C");
16        }
17        else if(num>=60){
18            System.out.println("you scored D");
19        }else{
20            System.out.println("you failed");
21        }
22    }
23 }
```

input

enter the percentage75
you scored C

9. If a customer wants to take a t-shirt from your shop and he wants to buy a t-shirt and feeds in his/her size. Then print the availability as per their preference. [Using Switch Case Statement].



```
1 import java.util.Scanner;
2 public class Main
3 {
4     public static void main(String[] args) {
5         Scanner sc= new Scanner(System.in);
6         System.out.println("enter the t-shirt size");
7         String size= sc.nextLine();
8         switch (size){
9             case "s":
10                System.out.println("we have 3 in stock for small");
11                break;
12             case "m":
13                System.out.println("we have 7 in stock for medium");
14                break;
15             case "l":
16                System.out.println("we have 9 in stock for large");
17                break;
18             default:
19
20         }
21 }
```

input

```
enter the t-shirt size
m
we have 7 in stock for medium

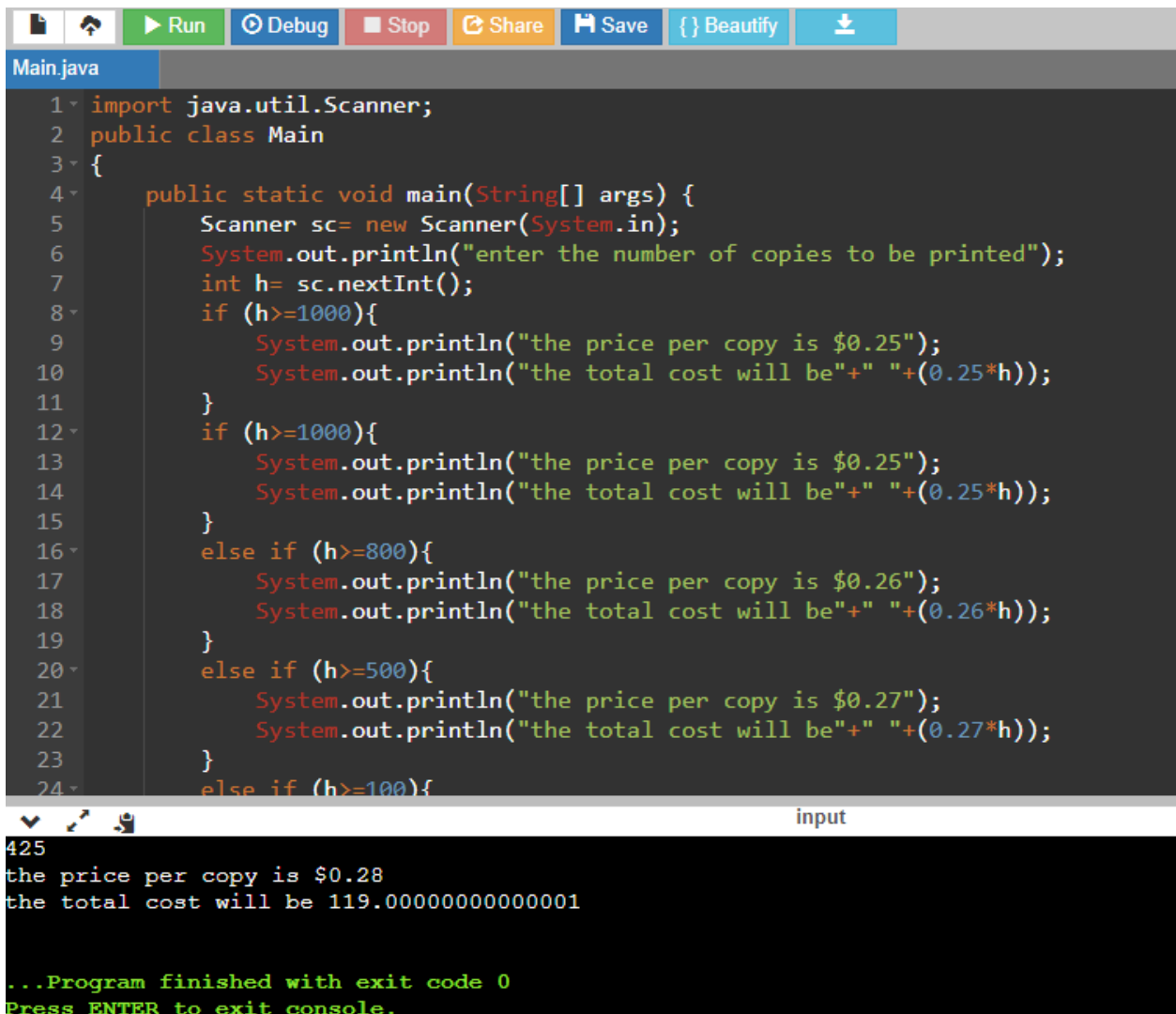
...Program finished with exit code 0
Press ENTER to exit console.
```

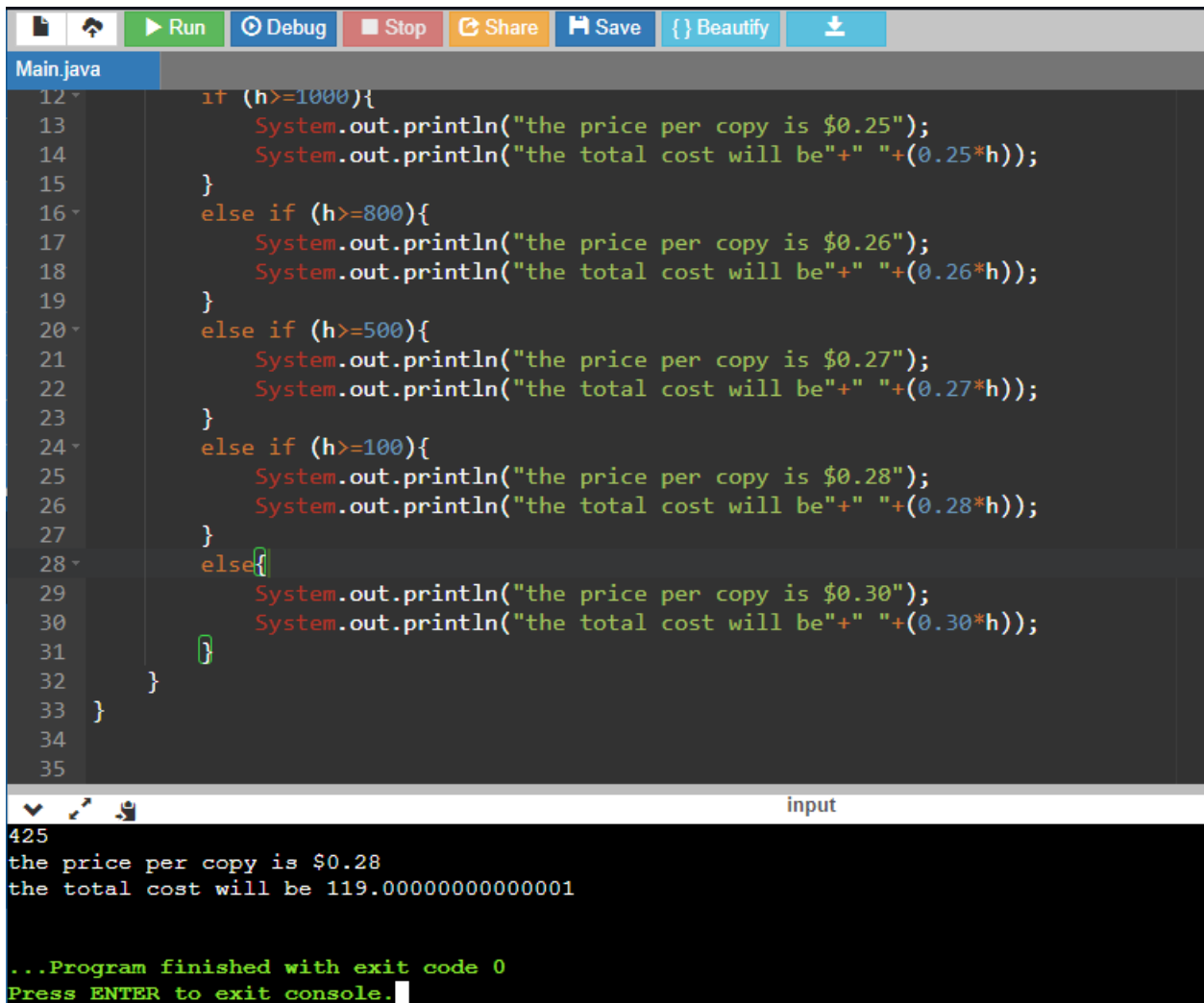
Group D

1. Let's create a printing application program where we will take the number of copies to be printed as input from the user and then prints the price per copy and the total price for the printing copies.

The chart price to print the number of copies is given below:

- ☐ 0 – 99 : \$0.30 per copy
- ☐ 100 – 499 : \$0.28 per copy
- ☐ 500 – 799 : \$0.27 per copy
- ☐ 800 – 1000 : \$0.26 per copy
- ☐ over 1000 : \$0.25 per copy





The image shows a screenshot of an IDE window titled "Main.java". The code is a Java program that uses a series of if-else statements to calculate the total cost based on the number of copies (h). The code is as follows:

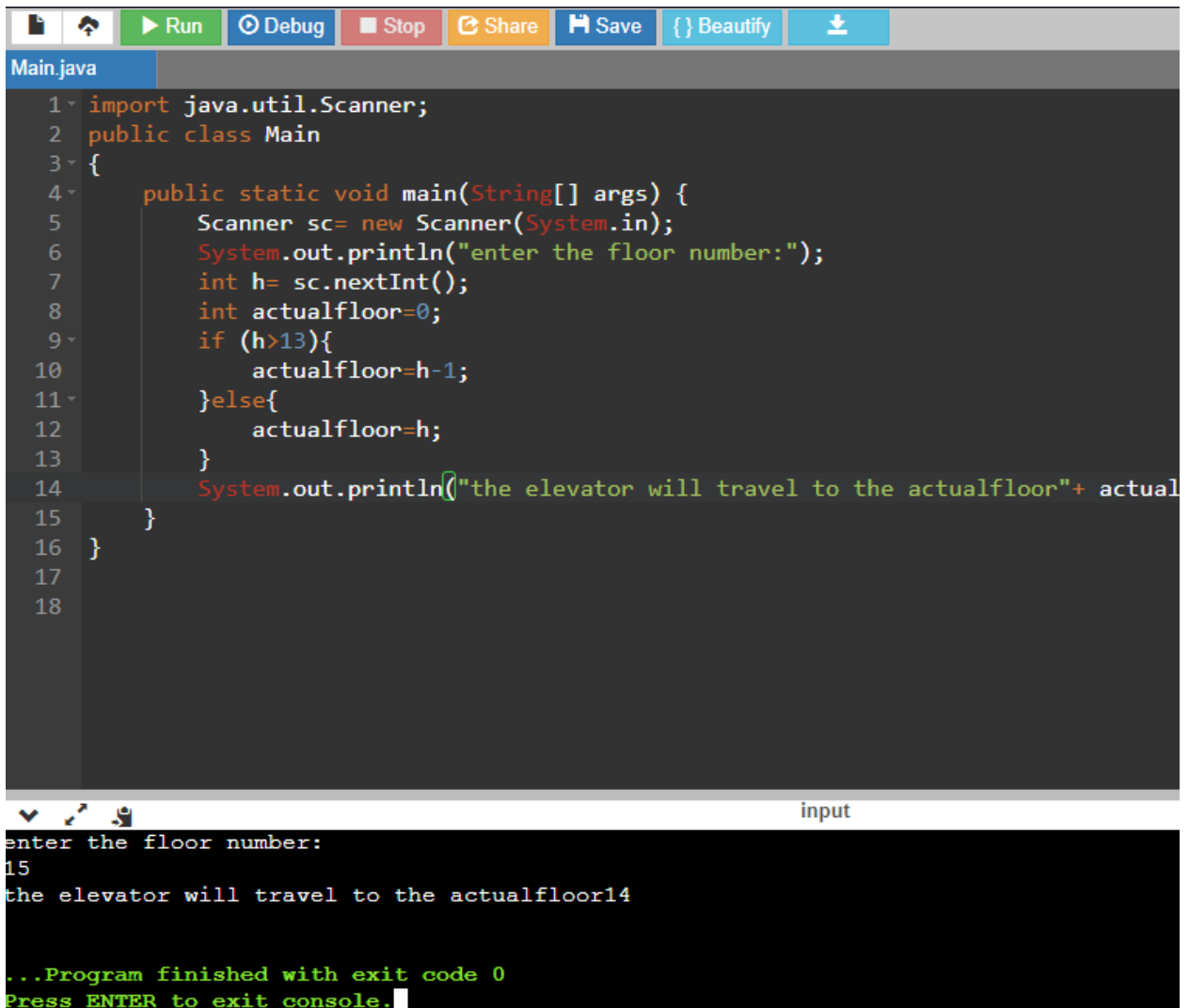
```
12 ~ if (h>=1000){
13     System.out.println("the price per copy is $0.25");
14     System.out.println("the total cost will be"+" "+(0.25*h));
15 }
16 ~ else if (h>=800){
17     System.out.println("the price per copy is $0.26");
18     System.out.println("the total cost will be"+" "+(0.26*h));
19 }
20 ~ else if (h>=500){
21     System.out.println("the price per copy is $0.27");
22     System.out.println("the total cost will be"+" "+(0.27*h));
23 }
24 ~ else if (h>=100){
25     System.out.println("the price per copy is $0.28");
26     System.out.println("the total cost will be"+" "+(0.28*h));
27 }
28 ~ else{
29     System.out.println("the price per copy is $0.30");
30     System.out.println("the total cost will be"+" "+(0.30*h));
31 }
32 }
33 }
34
35
```

Below the code editor, there is a console window. The input "425" is entered, and the output is:

```
425
the price per copy is $0.28
the total cost will be 119.000000000000001

...Program finished with exit code 0
Press ENTER to exit console.
```

2. Follow the simulation of Floor example from lecture slide and develop a system where you need to ask user the floor number. Also determine whether the floor is actual floor or not.



```
1 import java.util.Scanner;
2 public class Main
3 {
4     public static void main(String[] args) {
5         Scanner sc= new Scanner(System.in);
6         System.out.println("enter the floor number:");
7         int h= sc.nextInt();
8         int actualfloor=0;
9         if (h>13){
10             actualfloor=h-1;
11         }else{
12             actualfloor=h;
13         }
14         System.out.println("the elevator will travel to the actualfloor"+ actual
15     }
16 }
17
18
```

input

```
enter the floor number:
15
the elevator will travel to the actualfloor14

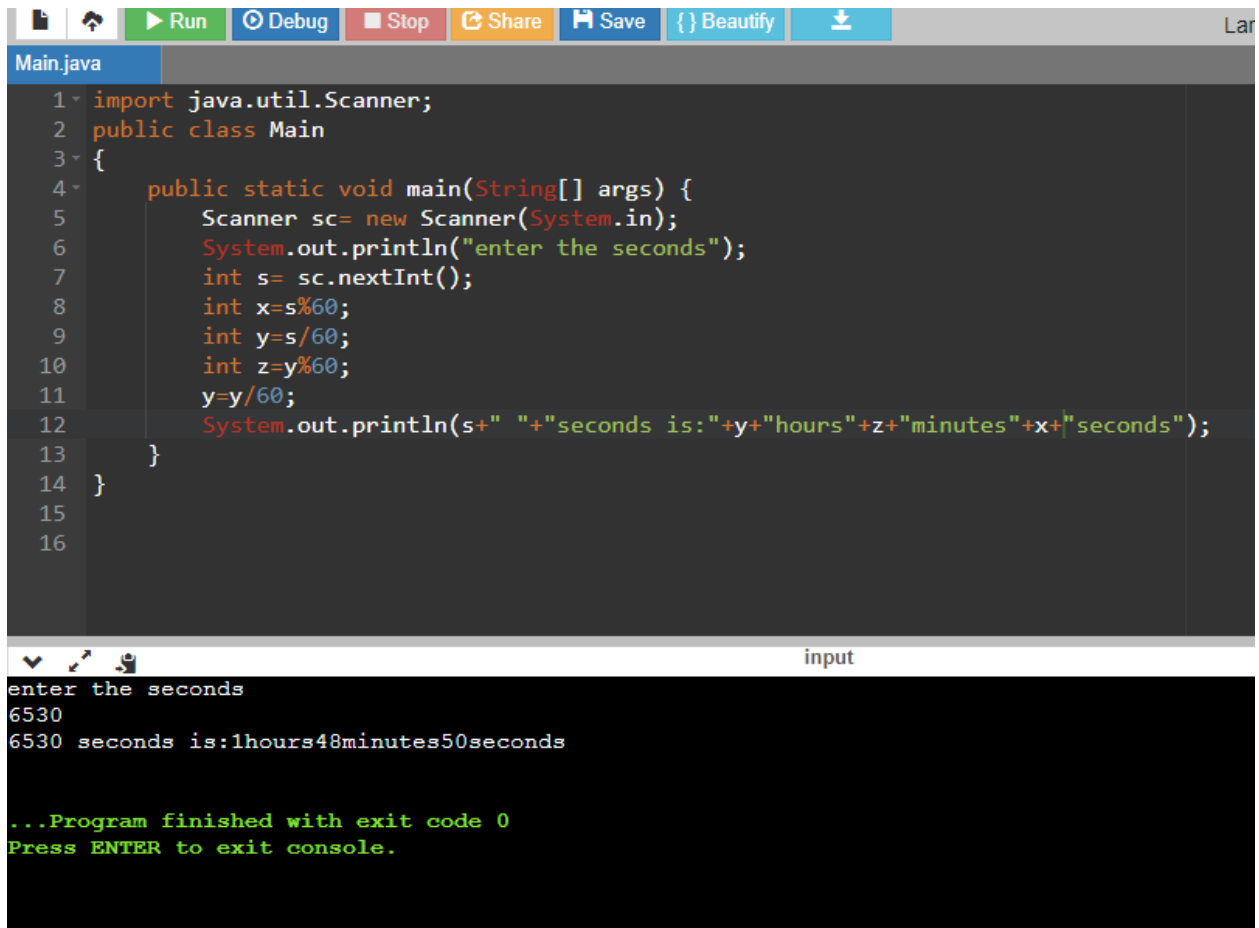
...Program finished with exit code 0
Press ENTER to exit console.
```

3. [Scenario] You're waiting at a station and the announcer has just broadcast that your train is going to be 13445 seconds late. You need to work out in understandable terms what that means. You assume this is going to be quite a long time so you whip out your laptop to write a program to convert the seconds into hours, minutes and seconds, aiming to maximize readability by giving priority to the largest units, i.e. the resulting seconds and minute's values must not be greater than 60.

You will need four variables to hold: the total number of seconds; the number of hours; the number of minutes; and the number of remaining seconds. The example output should look something like

this:

13442 Seconds is: 3 Hours, 44 Minutes and 5 Seconds.



The screenshot shows a Java IDE with a dark theme. The top toolbar includes icons for Run, Debug, Stop, Share, Save, Beautify, and a download icon. The file name 'Main.java' is visible in the top left. The code in the editor is as follows:

```
1 import java.util.Scanner;
2 public class Main
3 {
4     public static void main(String[] args) {
5         Scanner sc= new Scanner(System.in);
6         System.out.println("enter the seconds");
7         int s= sc.nextInt();
8         int x=s%60;
9         int y=s/60;
10        int z=y%60;
11        y=y/60;
12        System.out.println(s+" "+"seconds is:"+y+"hours"+z+"minutes"+x+"seconds");
13    }
14 }
15
16
```

Below the code editor is a console window with the title 'input'. It displays the following text:

```
enter the seconds
6530
6530 seconds is:1hours48minutes50seconds

...Program finished with exit code 0
Press ENTER to exit console.
```