

# Object Oriented Design and Programming

## Workshop2

Go through the questions below and answer the questions:

1. Taking length and breadth of a rectangle from user and check if it is square or not.

```
Week 2 > Workshop > J taskOne.java > taskOne > main(String[])
1  import java.util.Scanner; // Import the Scanner class
2
3  public class taskOne{
4      public static void main(String[] args){
5          Scanner what = new Scanner(System.in);
6          System.out.println(x:"Length:");
7          int length = what.nextInt();
8
9          System.out.println(x:"Breath:");
10         int breath = what.nextInt();
11
12         if(length == breath){
13             System.out.println(x:"It is a Square.");
14         }else{
15             System.out.println(x:"It is a rectangle");
16         }
17     }
18 }
```

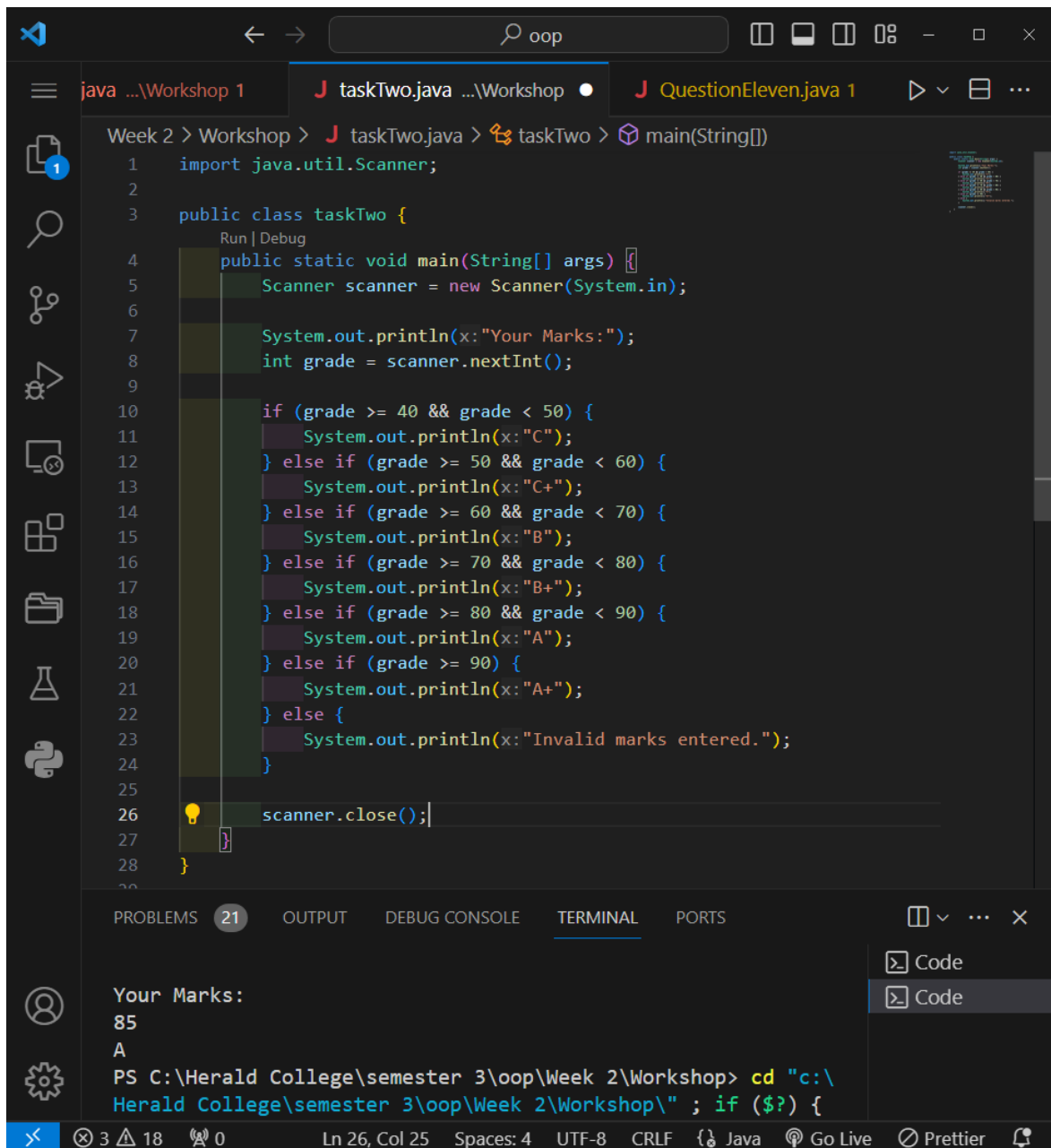
PROBLEMS 21 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
Length:
55
Breath:
55
It is a Square.
PS C:\Herald College\semester 3\oop\Week 2\Workshop> cd "c:\Herald College\semester 3\oop\Week 2\Workshop\" ; if ($?) {
javac taskOne.java } ; if ($?) { java taskOne }
Length:
15
Breath:
5
It is a rectangle
PS C:\Herald College\semester 3\oop\Week 2\Workshop>
```

2. A college has following rules for grading system:

- a. 40 to 50 - C
- b. 50 to 60 - C+
- c. 60 to 70 - B
- d. 70 to 80 - B+
- e. 80 to 90 - A
- f. Above 90 - A+

Ask user to enter marks and print the corresponding grade using if-else-if statement.



```
Week 2 > Workshop > taskTwo.java > taskTwo > main(String[])
1  import java.util.Scanner;
2
3  public class taskTwo {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6
7          System.out.println(x:"Your Marks:");
8          int grade = scanner.nextInt();
9
10         if (grade >= 40 && grade < 50) {
11             System.out.println(x:"C");
12         } else if (grade >= 50 && grade < 60) {
13             System.out.println(x:"C+");
14         } else if (grade >= 60 && grade < 70) {
15             System.out.println(x:"B");
16         } else if (grade >= 70 && grade < 80) {
17             System.out.println(x:"B+");
18         } else if (grade >= 80 && grade < 90) {
19             System.out.println(x:"A");
20         } else if (grade >= 90) {
21             System.out.println(x:"A+");
22         } else {
23             System.out.println(x:"Invalid marks entered.");
24         }
25
26         scanner.close();
27     }
28 }
```

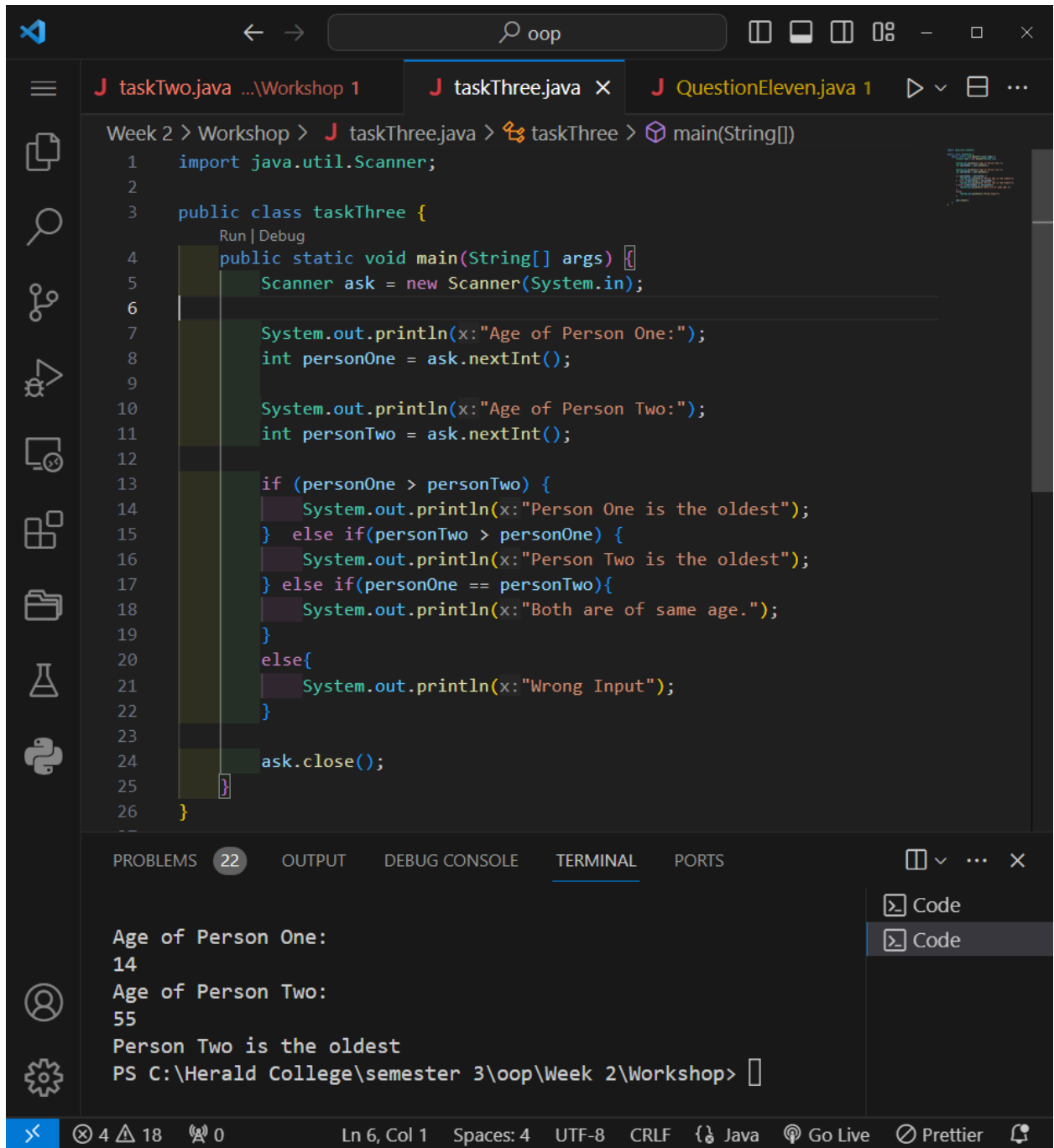
PROBLEMS 21 OUTPUT DEBUG CONSOLE TERMINAL PORTS

Your Marks:  
85  
A

PS C:\Herald College\semester 3\oop\Week 2\Workshop> cd "c:\Herald College\semester 3\oop\Week 2\Workshop\" ; if (\$?) {

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3. Determine oldest and youngest among the people taking the using input.



The screenshot shows the Visual Studio Code editor with a Java file named `taskThree.java` open. The code is a `main` method that uses a `Scanner` to take input for the ages of two people, `personOne` and `personTwo`. It then uses a series of `if` and `else if` statements to determine who is older, who is younger, or if they are the same age. The output is printed to the console.

```
Week 2 > Workshop > J taskThree.java > taskThree > main(String[])
1  import java.util.Scanner;
2
3  public class taskThree {
4      public static void main(String[] args) {
5          Scanner ask = new Scanner(System.in);
6
7          System.out.println(x:"Age of Person One:");
8          int personOne = ask.nextInt();
9
10         System.out.println(x:"Age of Person Two:");
11         int personTwo = ask.nextInt();
12
13         if (personOne > personTwo) {
14             System.out.println(x:"Person One is the oldest");
15         } else if(personTwo > personOne) {
16             System.out.println(x:"Person Two is the oldest");
17         } else if(personOne == personTwo){
18             System.out.println(x:"Both are of same age.");
19         }
20         else{
21             System.out.println(x:"Wrong Input");
22         }
23
24         ask.close();
25     }
26 }
```

The terminal output shows the execution of the program with the following input and output:

```
Age of Person One:
14
Age of Person Two:
55
Person Two is the oldest
PS C:\Herald College\semester 3\oop\Week 2\Workshop>
```

#### 4. If

$x = 2$ ,  $y = 5$ ,  $z = 0$

then find values of the following expressions:

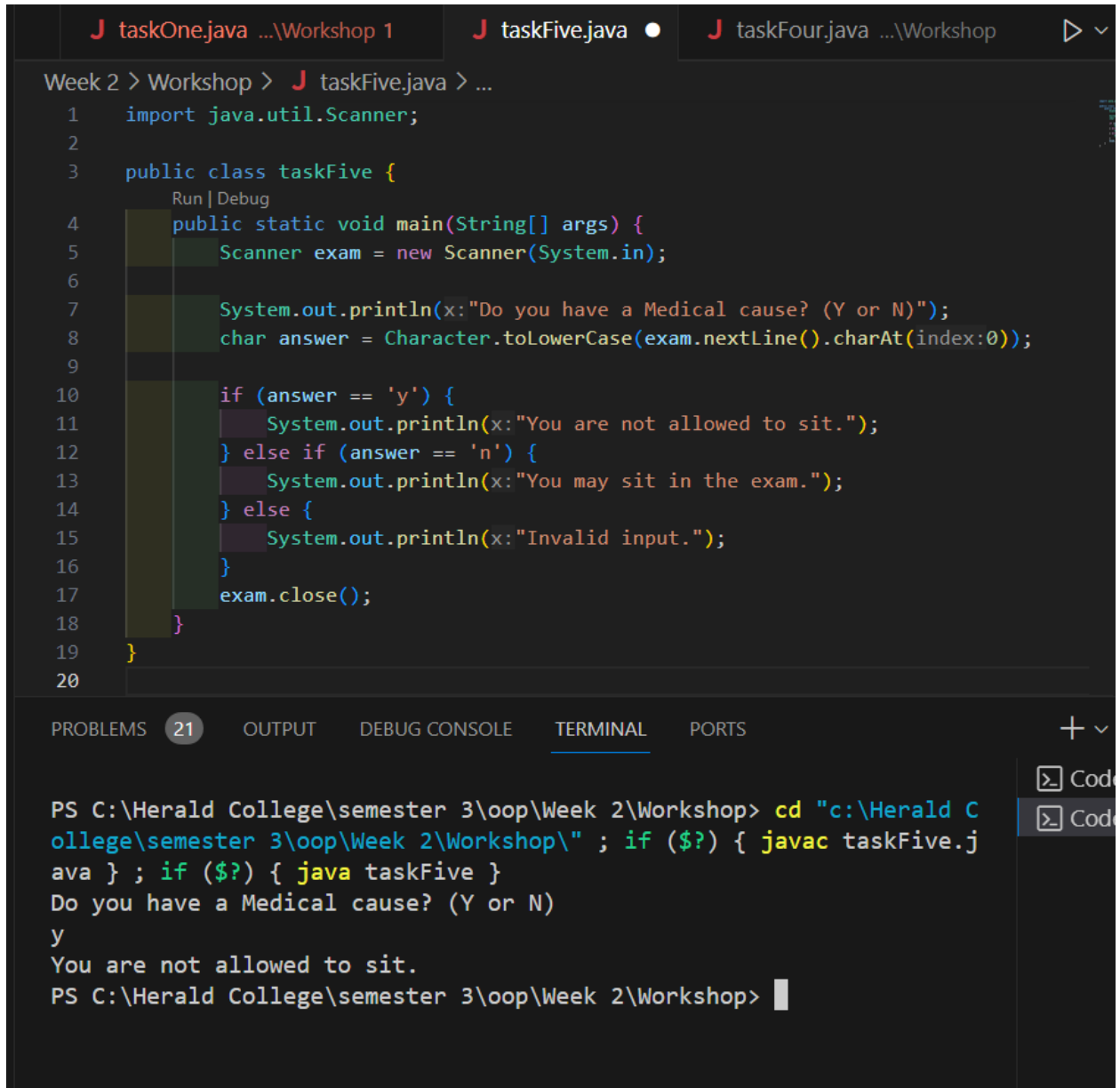
a.  $x == 2$ , b.  $x != 5$ , c.  $x != 5 \ \&\& \ y \geq 5$ , d.  $z != 0 \ || \ x == 2$ , e.  $!(y < 10)$

```
Week 2 > Workshop > taskFour.java > taskFour
1  public class taskFour{
    Run | Debug
2      public static void main(String[] args){
3          int x = 2;
4          int y = 5;
5          int z = 0;
6          boolean result;
7
8          result = x == 2;
9          System.out.println("A. x == 2 is: " +result);
10
11         result = x != 5;
12         System.out.println("B. x != 5 is: " +result);
13
14         result = x != 5 && y >= 5;
15         System.out.println("C.x != 5 && y >= 5 is: " +result);
16
17         result = z != 0 || x == 2;
18         System.out.println("D. z != 0 || x == 2 is: " +result);
19
20         result = !(y < 10);
21         System.out.println("E. !(y < 10) is: " +result);
22
23     }
24 }
```

PROBLEMS 22 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
javac taskFour.java } ; if ($?) { java taskFour }
A. x == 2 is: true
B. x != 5 is: true
C.x != 5 && y >= 5 is: true
D. z != 0 || x == 2 is: true
E. !(y < 10) is: false
```

5. Ask student if he/she has medical cause or not ( 'y or 'n' ). if ('y') print you are not allowed to sit in the exam and if('n') print you can sit in the exam.



The screenshot shows an IDE with three tabs: taskOne.java, taskFive.java (active), and taskFour.java. The code in taskFive.java is as follows:

```
Week 2 > Workshop > taskFive.java > ...
1  import java.util.Scanner;
2
3  public class taskFive {
4      public static void main(String[] args) {
5          Scanner exam = new Scanner(System.in);
6
7          System.out.println(x:"Do you have a Medical cause? (Y or N)");
8          char answer = Character.toLowerCase(exam.nextLine().charAt(index:0));
9
10         if (answer == 'y') {
11             System.out.println(x:"You are not allowed to sit.");
12         } else if (answer == 'n') {
13             System.out.println(x:"You may sit in the exam.");
14         } else {
15             System.out.println(x:"Invalid input.");
16         }
17         exam.close();
18     }
19 }
20
```

The terminal output shows the execution of the program:

```
PS C:\Herald College\semester 3\oop\Week 2\Workshop> cd "c:\Herald College\semester 3\oop\Week 2\Workshop\" ; if ($?) { javac taskFive.java } ; if ($?) { java taskFive }
Do you have a Medical cause? (Y or N)
y
You are not allowed to sit.
PS C:\Herald College\semester 3\oop\Week 2\Workshop>
```

6. Write a program to check the odd and even numbers using user input.

```
Week 2 > Workshop > J taskSix.java > taskSix > main(String[])
1  import java.util.Scanner;
2
3  public class taskSix{
    Run | Debug
4  public static void main(String[] args){
5
6      Scanner x = new Scanner(System.in);
7      // printing for users input with instructions
8      System.out.println(x:"Enter a number:");
9      int valueX = x.nextInt();
10     // adding if else conditional statement
11     if (valueX % 2 == 1){
12         System.out.println(x:"its an odd number" );
13     }else{
14         System.out.println(x:"Even number");
15     }
16     x.close();
17 }
```

Enter a number:  
7  
its an odd number

7. Write a program to print the value of x ,if and only if the value of x is  $x > 5$  and less  $x < 15$  taking user input.

```
Week 2 > Workshop > taskSix.java > taskSix > main(String[])
1  import java.util.Scanner;
2
3  public class taskSix{
4      public static void main(String[] args){
5
6          Scanner x = new Scanner(System.in);
7          // printing for users input with instructions
8          System.out.println(x:"Enter the value of x:");
9          int valueX = x.nextInt();
10
11         // adding if else conditional statement
12         if (valueX > 5 && valueX < 15){
13             System.out.println("The Value of x: "+valueX );
14         }
15         x.close();
16     }
17 }
```

PROBLEMS 21 OUTPUT DEBUG CONSOLE TERMINAL PORTS

You are not allowed to sit.

PS C:\Herald College\semester 3\oop\Week 2\Workshop> cd "c:\Herald College\semester 3\oop\Week 2\Workshop\" ; if (\$?) { javac taskSix.java } ; if (\$?) { java taskSix }

Enter the value of x:

80

PS C:\Herald College\semester 3\oop\Week 2\Workshop> cd "c:\Herald College\semester 3\oop\Week 2\Workshop\" ; if (\$?) { javac taskSix.java } ; if (\$?) { java taskSix }

Enter the value of x:

12

8. Assuming the value: x=20,y=15,z=10.Complete the code below and observe the result.

if (x > y)

{

    if (y > z){ System.out.println("x is greater than y and z");} // statement1.

}

else

    System.out.println("x is less than or equal to y"); // statement2.

```
Week 2 > Workshop > taskEight.java > taskEight > main(String[])
1
2 public class taskEight{
3     Run | Debug
4     public static void main(String[] args){
5         int x = 20;
6         int y = 15;
7         int z = 10;
8         if (x > y){
9             if (y > z){
10                System.out.println(x:"x is greater than y and z");
11            }
12        }
13        else{
14            System.out.println(x:"x is less than or equal to y");
15        }
16    }
17 }
```

```
x is greater than y and z
```



9. A college has following rules for grading system:

- a. grade -A+     print ("Excellent !")
  - b. grade -A     print ("Outstanding !")
  - c. grade -B+     print ("Good !")
  - d. grade -B     print ("Can do better !")
  - e. grade -C+     print ("Just Passed !")
  - f. grade -C     print ("You Failed !")
- print ("Invalid grade!") for default case

Ask user to enter grade and print the corresponding grade using switch statement

```
J builtIn.java 8    J taskEleven.java    J taskNine.java ●
Week 2 > Workshop > J taskNine.java > taskNine > main(String[])
1  import java.util.Scanner;
2
3  public class taskNine {
    Run | Debug
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6
7          System.out.println(x:"Enter your grade: ");
8          String grade = scanner.next();
9
10         switch (grade) {
11             case "A+":
12                 System.out.println(x:"Excellent!");
13                 break;
14             case "A":
15                 System.out.println(x:"Outstanding!");
16                 break;
17             case "B+":
18                 System.out.println(x:"Good!");
19                 break;
20             case "B":
21                 System.out.println(x:"Can do better!");
22                 break;
23             case "C+":
24                 System.out.println(x:"Just Passed!");
25                 break;
26             case "C":
27                 System.out.println(x:"You Failed!");
28                 break;
29             default:
30                 System.out.println(x:"Invalid grade!");
31         }
32         scanner.close();
33     }
```

Enter your grade:

B+

Good!

Enter your grade:

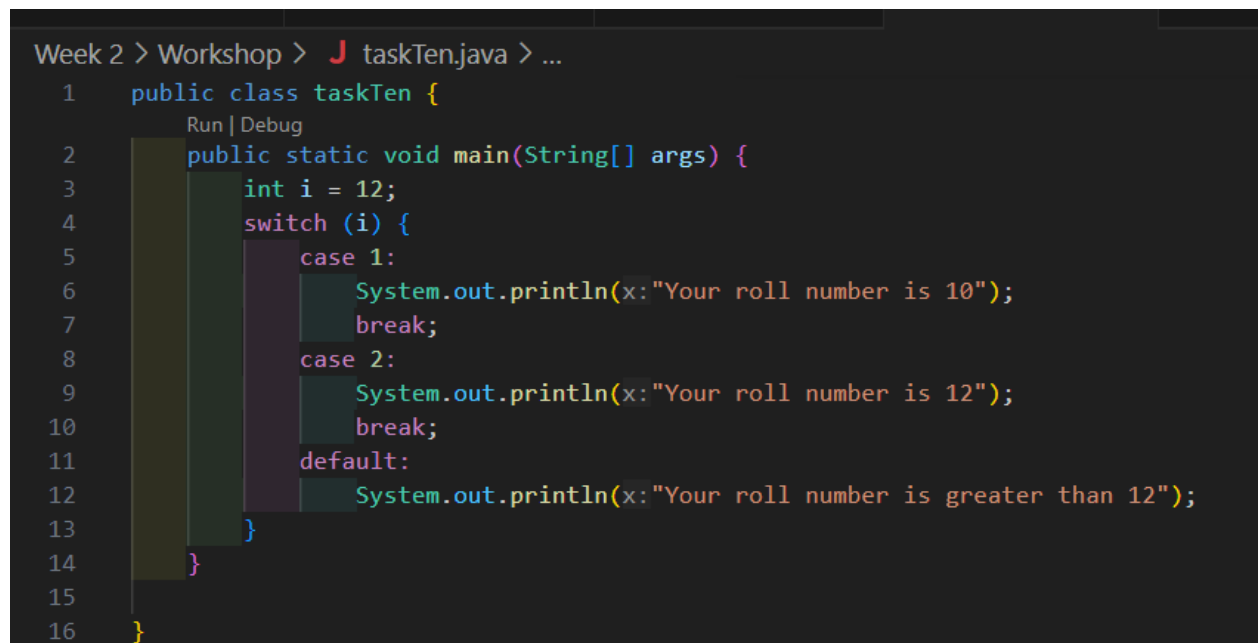
B

Can do better!

PS C:\Herald\_College\src

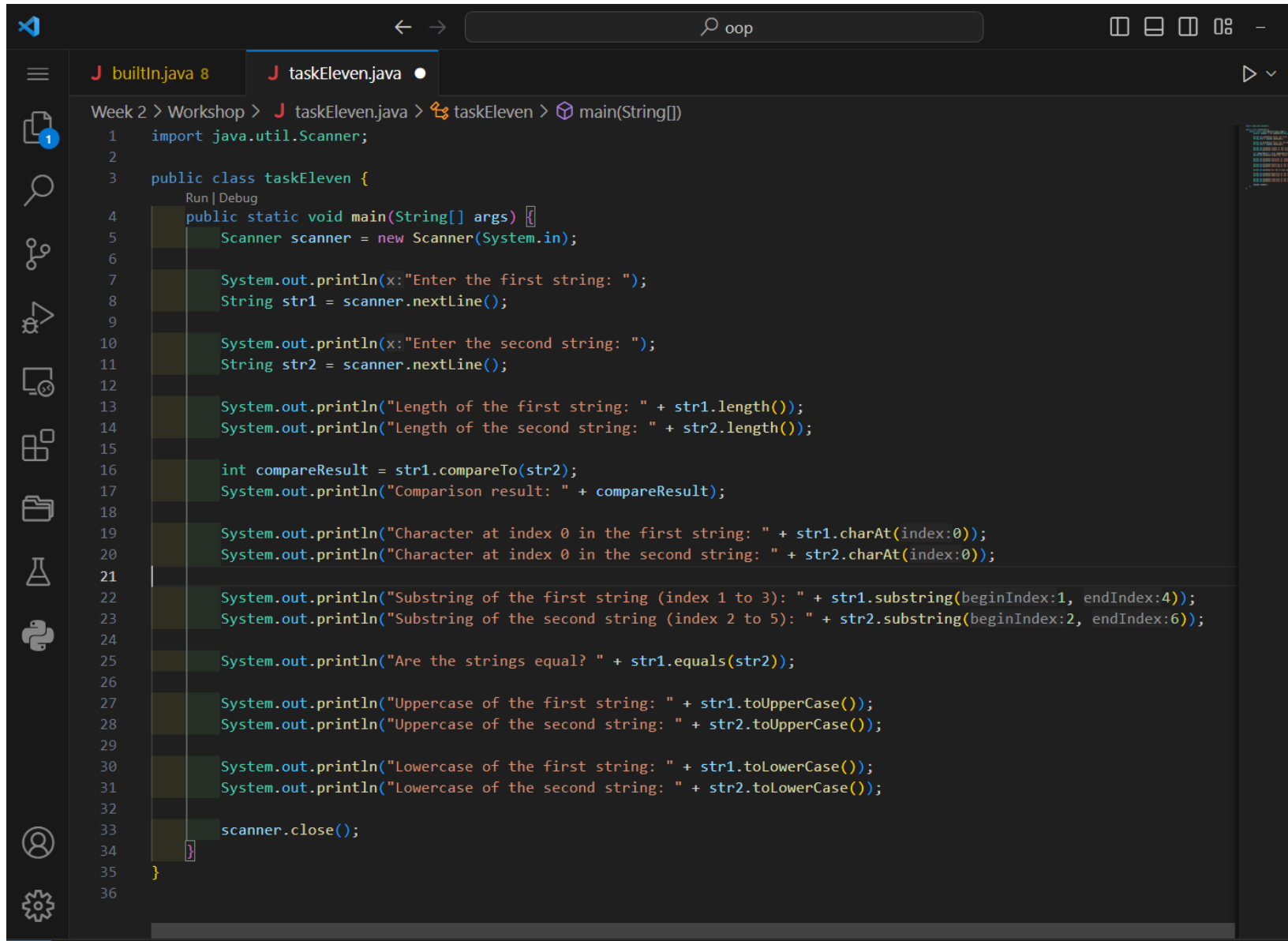
10. Run the code below and observe how the break statement works.

```
class Student {  
    public static void main(String[] args) {  
        int roll_no = 12;  
        switch (i) {  
            case 1:  
                System.out.println("Your roll number is 10");  
                break;  
            case 2:  
                System.out.println("Your roll number is 12");  
                break;  
            default:  
                System.out.println("Your roll number is greater than 12");  
        }  
    }  
}
```



```
Week 2 > Workshop > taskTen.java > ...  
1  public class taskTen {  
2      Run | Debug  
3      public static void main(String[] args) {  
4          int i = 12;  
5          switch (i) {  
6              case 1:  
7                  System.out.println(x:"Your roll number is 10");  
8                  break;  
9              case 2:  
10                 System.out.println(x:"Your roll number is 12");  
11                 break;  
12             default:  
13                 System.out.println(x:"Your roll number is greater than 12");  
14             }  
15         }  
16     }
```

11. Write a program to take two string user input and perform the following string methods and observe the result
- a) length()
  - b) compareTo()
  - c) charAt()
  - d) substring()
  - e) Equals
  - f) toUpperCase()
  - g) toLowerCase()



The screenshot shows a code editor with a Java file named `taskEleven.java`. The code implements a program that takes two strings as input and performs various string operations. The IDE interface includes a sidebar with icons for Explorer, Search, Source Control, Run and Debug, Extensions, File Explorer, Run and Debug Console, and Settings. The top bar shows the file path `Week 2 > Workshop > taskEleven.java > taskEleven > main(String[])` and a search bar with the text `oop`.

```
1  import java.util.Scanner;
2
3  public class taskEleven {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6
7          System.out.println("Enter the first string: ");
8          String str1 = scanner.nextLine();
9
10         System.out.println("Enter the second string: ");
11         String str2 = scanner.nextLine();
12
13         System.out.println("Length of the first string: " + str1.length());
14         System.out.println("Length of the second string: " + str2.length());
15
16         int compareResult = str1.compareTo(str2);
17         System.out.println("Comparison result: " + compareResult);
18
19         System.out.println("Character at index 0 in the first string: " + str1.charAt(index:0));
20         System.out.println("Character at index 0 in the second string: " + str2.charAt(index:0));
21
22         System.out.println("Substring of the first string (index 1 to 3): " + str1.substring(beginIndex:1, endIndex:4));
23         System.out.println("Substring of the second string (index 2 to 5): " + str2.substring(beginIndex:2, endIndex:6));
24
25         System.out.println("Are the strings equal? " + str1.equals(str2));
26
27         System.out.println("Uppercase of the first string: " + str1.toUpperCase());
28         System.out.println("Uppercase of the second string: " + str2.toUpperCase());
29
30         System.out.println("Lowercase of the first string: " + str1.toLowerCase());
31         System.out.println("Lowercase of the second string: " + str2.toLowerCase());
32
33         scanner.close();
34     }
35 }
36
```

```
ollege\semester 3\oop\Week 2\Workshop\" ; if ($?) { javac taskEleven
.java } ; if ($?) { java taskEleven }
Enter the first string:
Programming
Enter the second string:
Achivement
Length of the first string: 11
Length of the second string: 10
Comparison result: 15
Character at index 0 in the first string: P
Character at index 0 in the second string: A
Substring of the first string (index 1 to 3): rog
Substring of the second string (index 2 to 5): hive
Are the strings equal? false
Uppercase of the first string: PROGRAMMING
Uppercase of the second string: ACHIVEMENT
Lowercase of the first string: programming
Lowercase of the second string: achivement
PS C:\Herald College\semester 3\oop\Week 2\Workshop> 
```