Basic Programming Practicum Experiment Jobsheet 4

From:

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Class:

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Absence:

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Major:

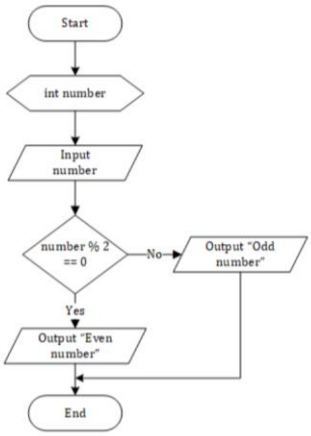
Information Technology

Study Program:

Informatic Engineering

Experiment 1

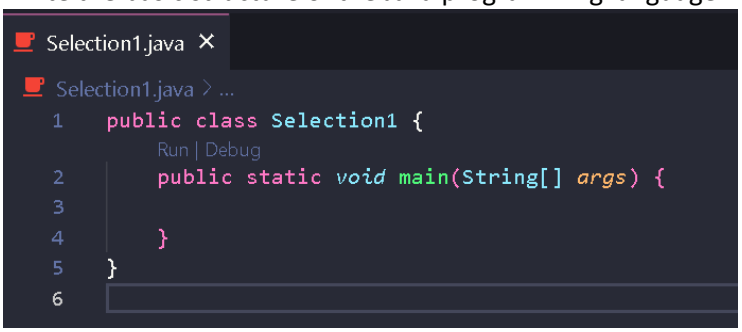
1. Observe the flowchart!



The flowchart is used to determine odd or even numbers, then we will maketheprogram based on the flowchart.

2. Open a text editor. Create a new file, name it Selection1.java

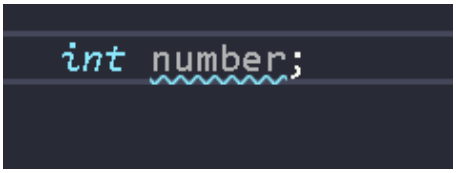
3. Write the basic structure of the Java programming language which contains the main() function



4. Add the Scanner library. Write the following code at the top outside the class

5. Make a Scanner declaration. Write the following code in the main() function

6. Create an int variable with the name number



7. Write down the syntax for entering the value from keyboard

```
System.out.print(s: "Enter number : ");
number = scanner.nextInt();
```

8. Create a selection structure to check whether the number is even or odd

```
if (number % 2 == 0) {
    System.out.println(x: "Even number");
} else {
    System.out.println(x: "Odd number");
}
```

9. Compile and run the program. Observe the results!

Code :

Selection1.java 1 ×

Selection1.java > Selection1 > main(String[])

```
2
3   public class Selection1 {
        Run | Debug
4       public static void main(String[] args) {
5
6           Scanner scanner = new Scanner(System.in);
7
8           int number;
9
10          System.out.print(s: "Enter number : ");
11          number = scanner.nextInt();
12
13          if (number % 2 == 0) {
14              System.out.println(x: "Even number");
15          } else {
16              System.out.println(x: "Odd number");
17          }
18
19      }
20  }
21
```

Result :

```
C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>javac Selection1.java

C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>java Selection1.java
Enter number : 1
Odd number

C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>
```

Questions!

1. Modify the program in its selection structure so that it becomes as follows:

```
String output = (number % 2 == 0) ? "Even number" : "Odd number";
System.out.println(output);
```

2. Compile, run, and observe the results!

3. Explain why the modified program output is the same as the program out put before it was modified!

Answer

1. Code :

```
String output = (number % 2 == 0) ? "Even number" : "Odd number";
System.out.println(output);
```

2. Result :

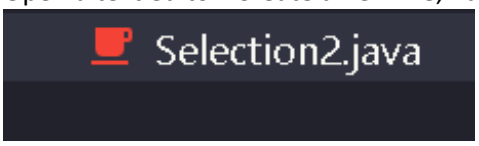
```
C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>java Selection1.java
Enter number : 9
Odd number

C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>
```

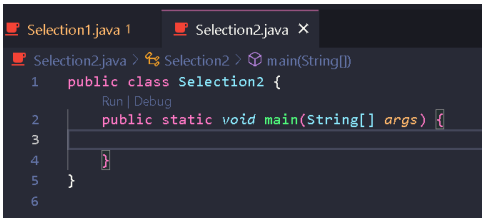
3. The code above using ternary operator. The ternary operator is the same as the if else statement but condensed into one line only.

Experiment 2

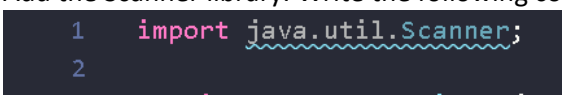
1. Open a text editor. Create a new file, name it Selection2.java



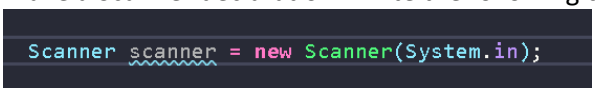
2. Write the basic structure of the Java programming language which contains the main() function



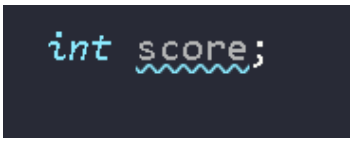
3. Add the Scanner library. Write the following code at the top outside the class



4. Make a Scanner declaration. Write the following code in the main() function

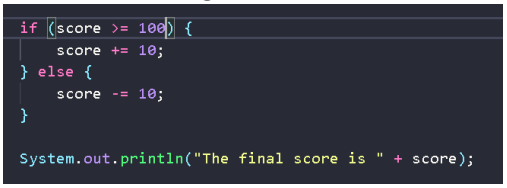


5. Create an int variable with the name score

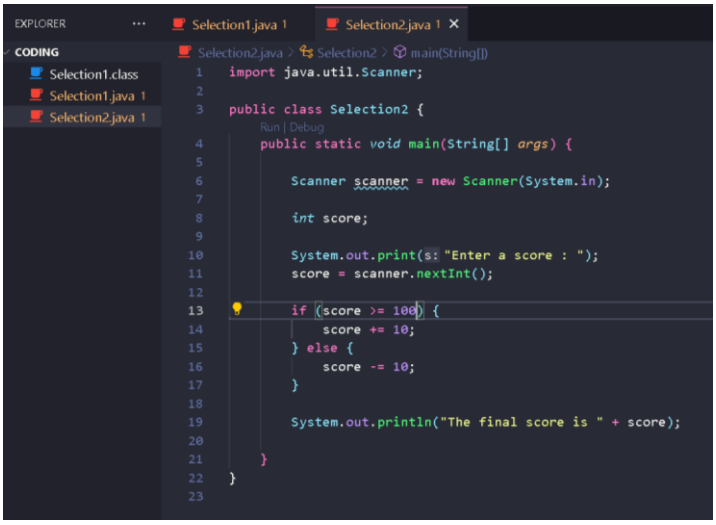


6. Write down the syntax for entering the value from keyboard

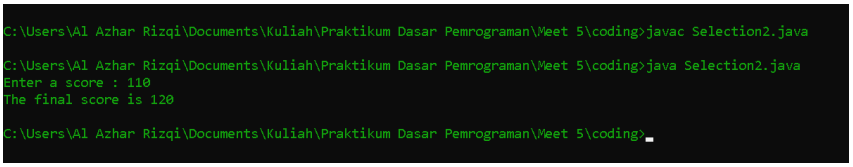
7. Add the following selection structure



8. Compile and run the program. Observe the results!
   Code :



Result :



Questions!

1. Describe the function of the following program code: score += 10; score -= 10;
2. Modify the program so that only one input becomes two (for example: score1and score2). Then calculate the average of the two values, if the average value is more than equal to 100 then subtract 5, whereas if the average value is lessthan100 then it will be printed immediately!

Answer

1. The function of score += 10 is score plus equals 10, and then function of score -= 10 is score subtract equals 10.
2. Code :

Result :

```
C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>java Selection2.java
Enter the first score : 90
Enter the seccond score : 90
The average score is 90.0

C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>
```

Experiment 3

1. Open a text editor. Create a new file, name it Selection3.java

2. Write the basic structure of the Java programming language which containsthemain() function

```
1  public class Selection3 {
       Run | Debug
2      public static void main(String[] args) {
3
4      }
5  }
6
```

3. Add the Scanner library. Write the following code at the top outside the class

```
1  import java.util.Scanner;
2
```

4. Make a Scanner declaration. Write the following code in the main() function

```
Scanner scanner = new Scanner(System.in);
```

5. Create an int variable with the name age

```
int age;
```

6. Write down the syntax for entering the value from keyboard

```
System.out.print("Enter your age : ");
age = scanner.nextInt();
```

7. Add the following selection structure to check the age category

```
if (age > 65) {
    System.out.println(x: "Elderly");
} else if (age > 18) {
    System.out.println(x: "Adults");
} else if (age > 12) {
    System.out.println(x: "Teens");
} else if (age > 5) {
    System.out.println(x: "Children");
} else {
    System.out.println(x: "Toddler");
}
```

8. Compile and run the program. Observe the results!
   Code :

```java
public class Selection3 {
    Run | Debug
    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        int age;

        System.out.print(s: "Enter your age : ");
        age = scanner.nextInt();

        if (age > 65) {
            System.out.println(x: "Elderly");
        } else if (age > 18) {
            System.out.println(x: "Adults");
        } else if (age > 12) {
            System.out.println(x: "Teens");
        } else if (age > 5) {
            System.out.println(x: "Children");
        } else {
            System.out.println(x: "Toddler");
        }

    }
}
```

Result :

```
C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>javac Selection3.java

C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>java Selection3.java
Enter your age : 19
Adults

C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>
```

Questions!

1. How many conditions exist in experiment 3? Mention what the conditionsare!
2. Modify the program so that if the age entered is 0 years or less than0it will display the output "Sorry, the age you entered is wrong"!

Answer

1. There is 5 conditions. First if age > 65, second else if age > 18, third else if age > 12, fourth else if age > 5, and last else.
2. Code :

```java
import java.util.Scanner;

public class Selection3 {
    Run | Debug
    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        int age;

        System.out.print(s: "Enter your age : ");
        age = scanner.nextInt();

        if (age > 65) {
            System.out.println(x: "Elderly");
        } else if (age > 18) {
            System.out.println(x: "Adults");
        } else if (age > 12) {
            System.out.println(x: "Teens");
        } else if (age > 5) {
            System.out.println(x: "Children");
        } else if (age <= 0) {
            System.out.println(x: "Sorry, the age you entered is wrong!");
        } else {
            System.out.println(x: "Toddler");
        }

    }
}
```

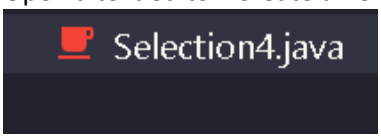
Result :

```
C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>java Selection3.java
Enter your age : 0
Sorry, the age you entered is wrong!

C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>
```

Experiment 4

1. Open a text editor. Create a new file, name it Selection4.java



2. Write the basic structure of the Java programming language which containsthemain() function

```
Selection4.java > Selection4 > main(String[])
1   public class Selection4 {
        Run | Debug
2       public static void main(String[] args) {
3
4       }
5   }
6
```

3. Add the Scanner library. Write the following code at the top outside the class

```
1   import java.util.Scanner;
2
```

4. Make a Scanner declaration. Write the following code in the main() function

```
Scanner scanner = new Scanner(System.in);
```

5. Create the following variables

```
double number1, number2, result;
char operator;
```

6. Write down the syntax for entering values from keyboard

```
System.out.print(s: "Enter the first number : ");
number1 = scanner.nextDouble();
System.out.print(s: "Enter the second number : ");
number2 = scanner.nextDouble();
System.out.print(s: "Enter an operator (+ - * / ) : ");
operator = scanner.next().charAt(index: 0);
```

7. Add the following selection structure

```
switch (operator) {
    case '+':
    result = number1 + number2;
    System.out.println(number1 + " + " + number2 + " = " + result);
    break;
    case '-':
    result = number1 - number2;
    System.out.println(number1 + " - " + number2 + " = " + result);
    break;
    case '*':
    result = number1 * number2;
    System.out.println(number1 + " * " + number2 + " = " + result);
    break;
    case '/':
    result = number1 / number2;
    System.out.println(number1 + " / " + number2 + " = " + result);
    break;
    default:
    System.out.println(x: "The operator you entered is wrong!!!");
}
```

8. Compile and run the program. Observe the results!

Code :

```
ava > Selection4 > main(String[])
   Scanner scanner = new Scanner(System.in);

   double number1, number2, result;
   char operator;

   System.out.print(s: "Enter the first number : ");
   number1 = scanner.nextDouble();
   System.out.print(s: "Enter the second number : ");
   number2 = scanner.nextDouble();
   System.out.print(s: "Enter an operator (+ - * / ) : ");
   operator = scanner.next().charAt(index: 0);

   switch (operator) {
       case '+':
       result = number1 + number2;
       System.out.println(number1 + " + " + number2 + " = " + result);
       break;
       case '-':
       result = number1 - number2;
       System.out.println(number1 + " - " + number2 + " = " + result);
       break;
       case '*':
       result = number1 * number2;
       System.out.println(number1 + " * " + number2 + " = " + result);
       break;
       case '/':
       result = number1 / number2;
       System.out.println(number1 + " / " + number2 + " = " + result);
       break;
       default:
       System.out.println(x: "The operator you entered is wrong!!!");
   }
```

Result :

```
C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>java Selection4.java
Enter the first number : 10
Enter the second number : 10
Enter an operator (+ - * / ) : *
10.0 * 10.0 = 100.0

C:\Users\Al Azhar Rizqi\Documents\Kuliah\Praktikum Dasar Pemrograman\Meet 5\coding>
```

Questions!

1. Explain the function of break and default in experiment 4!
2. Explain the function of the following program code commands! operator = input.next().charAt(0);

Answer

1. The function of break is it breaks out of the switch block. And function of default is running code if there is no case match.

2. next() function returns the next token/word in the input as a string and charAt(0) function returns the first character in that string.