Java Lab

Week 5 – Switch Statements

IMPORTANT! Save all your work to a safe location such as oneDrive.

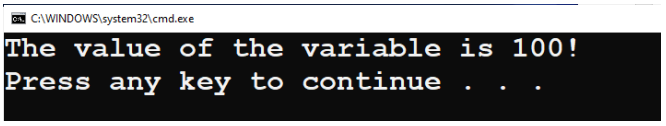
Create a folder for SDPD into which you will save all your work for this module, arranged how you wish. Ideally you should create a folder each week for your lab exercises. Note that you should create **a separate file** for each exercise.

Exercise 1

Goal: Create a program in Java, using a switch statement to determine output.

Create a new a Java program called JavaSwitch1. Create a variable called num1 and assign the value 100 to it. Write a program that uses a switch statement to determine the output, eg:

```
1  public class JavaSwitch1
2  {
3      public static void main(String[] args)
4      {
5          int num1 = 100;
6
7          switch(num1)
8          {
9              case 100:
10                 System.out.println("The value of the variable is 100!");
11                 break;
12         }
13
14     }
15 }
```

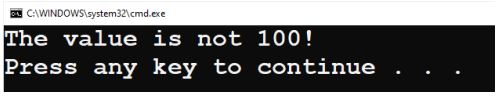


Change the value of the variable to any value other than 100, and run your program again. The statement should not run, as the case condition is not met:

Amend your code so that it includes an additional, default case, as shown below:

```
1  public class JavaSwitch1
2  {
3      public static void main(String[] args)
4      {
5          int num1 = 10;
6
7          switch(num1)
8          {
9              case 100:
10                 System.out.println("The value of the variable is 100!");
11                 break;
12
13             default:
14                 System.out.println("The value is not 100!");
15                 break;
16         }
17
18     }
19 }
20
```

The default case works much like “else” in an if statement – if no cases are met, then the default option will execute. Test your program again, ensuring that you have any value other than 100, and it should now produce an output:



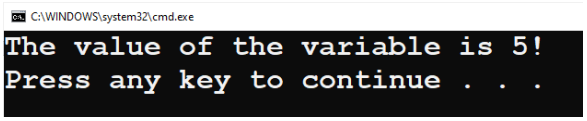
Exercise 2

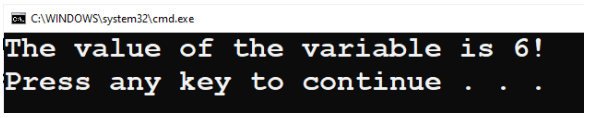
Goal: Create a program in Java, using a switch statement to determine output.

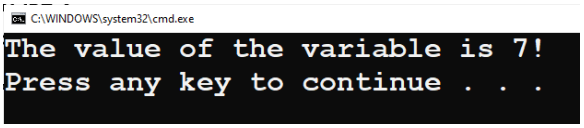
Create a new a Java program called JavaSwitch2. Create a variable called num1 and assign a value to it. Write a program that uses a switch statement to determine the output, eg:

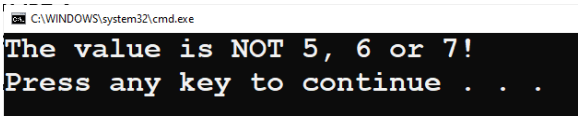
- If the value of num1 is 5, output an appropriate message
- If the value of num1 is 6, output an appropriate message
- If the value of num1 is 7, output an appropriate message
- If the value of num1 is any other value, output an appropriate message

For example:







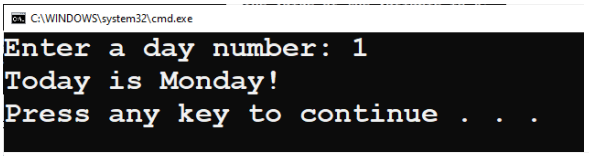


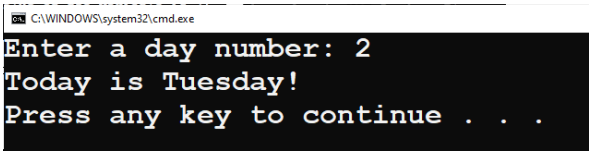
Test your program with multiple values to ensure it works as expected.

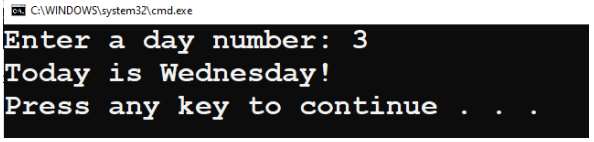
Exercise 3

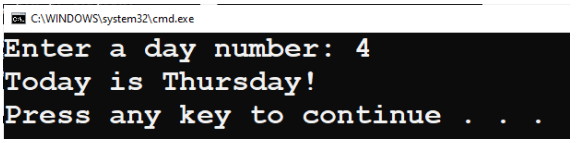
Goal: Create a program in Java, using a switch statement to determine output.

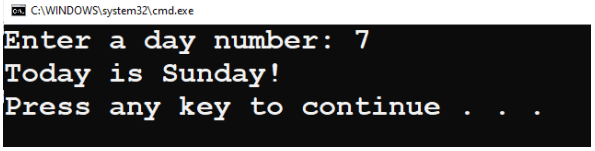
Create a new a Java program called JavaSwitch3. Prompt the user to enter a number, and based on the number input, the program should output the following, using a switch statement. If 1 is entered, then the message “Today is Monday” is output, if 2 is entered, then the message “Today is Tuesday”, up to 7 for Sunday. If any other value is entered, the message “Value entered is not valid” should be displayed.

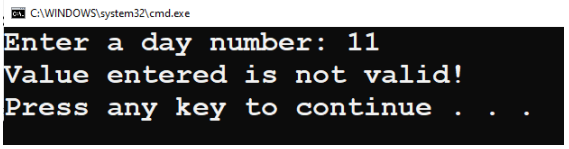










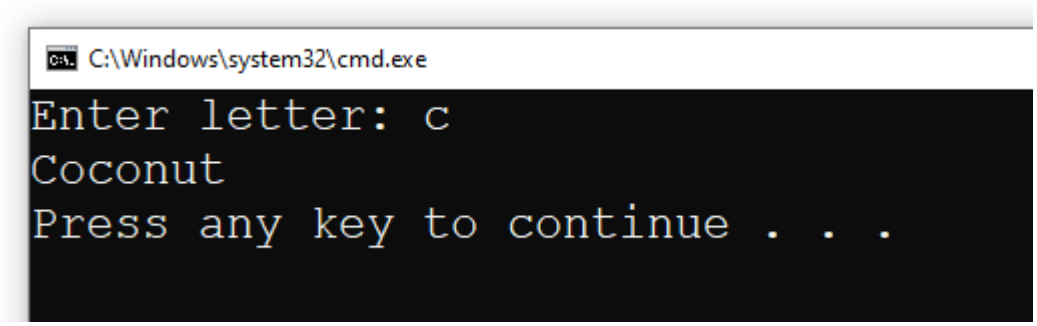


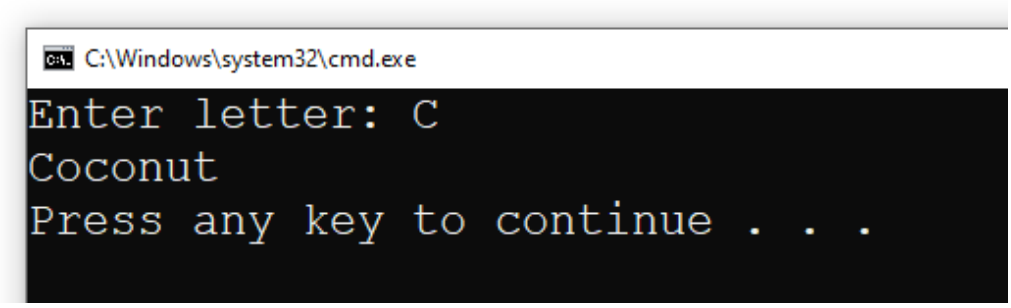
Exercise 4

Goal: Create a program in Java, using a switch statement with a char.

Create a new a Java program called JavaSwitch4. Allow the user to input a character, and output the following results, based on the character entered, using a **switch** statement.

If a or A is entered, output “Apple”, if b or B is entered, output “Banana”, if c or C is entered, output “Coconut”, otherwise output “Invalid value entered.”.





Exercise 5

Goal: Create a program in Java, using a switch statement with a char.

Create a new a Java program called JavaSwitch5. Convert the following code to a switch statement:

```
if (choice == 1)
{
System.out.println("You selected 1.");
}
else if (choice == 2 || choice == 3)
{
System.out.println("You selected 2 or 3.");
}
else if (choice == 4)
{
System.out.println("You selected 4.");
}
else
{
System.out.println("Select again please.");
}
```

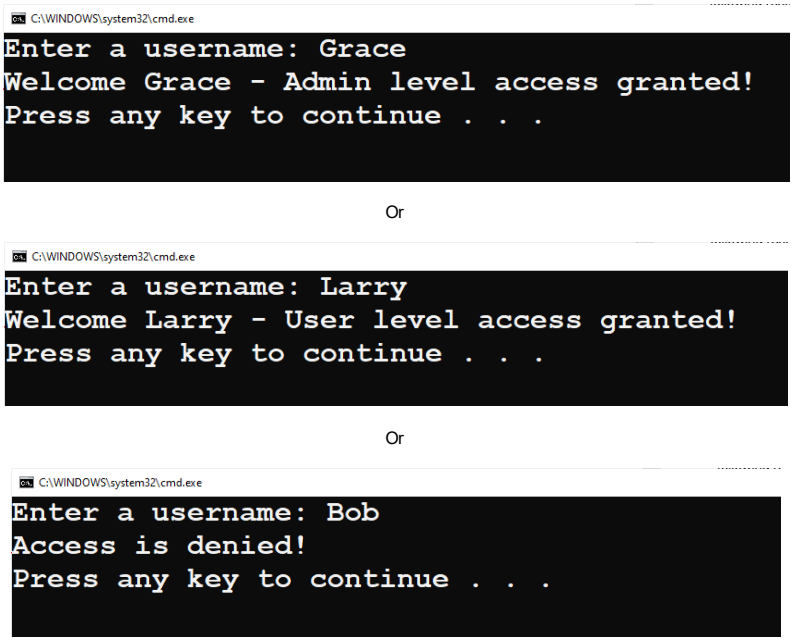
Ensure that your program runs correctly after converting it to a switch statement.

Exercise 6

Goal: Create a program in Java, using a switch statement with a String.

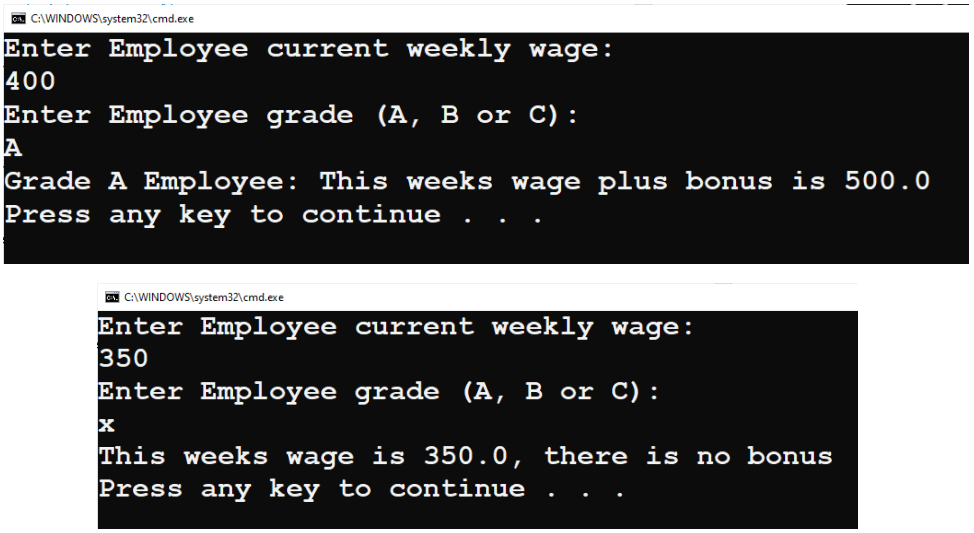
Create a new a Java program called JavaSwitch6. Allow the user to input a username, and output the following results, based on the name entered, using a **switch** statement.

Based on the name entered, the output should be as shown below:



Exercise 7

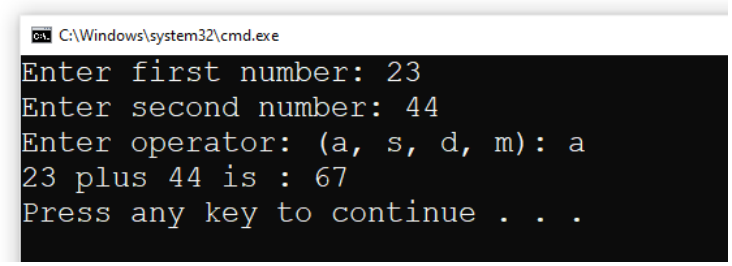
Create a program that will prompt the user to input 2 values – first the weekly wage of an employee, and then a grade for that employee – either A, B or C. If the employee gets grade a, then they get a bonus of 100 euros extra for the week, grade B and they get a bonus of 50 euros extra for the week, grade C gets a bonus of 15 euros extra for the week, and any other input gets no bonus for the week. Your output can be similar to as shown below:

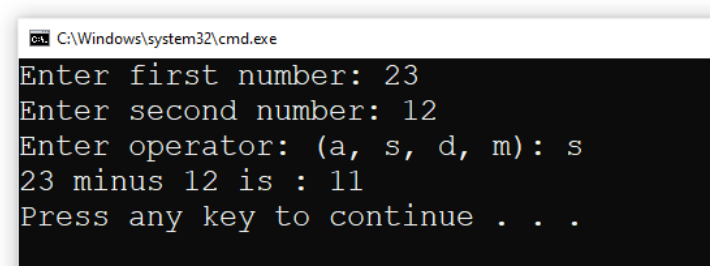


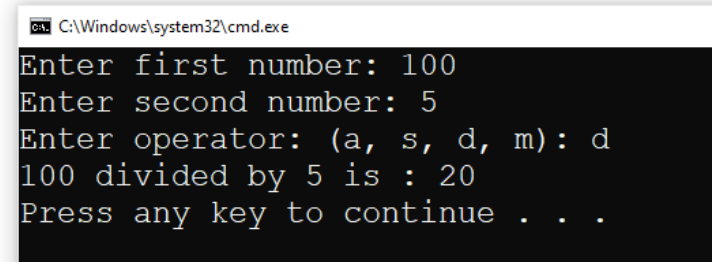
Exercise 8

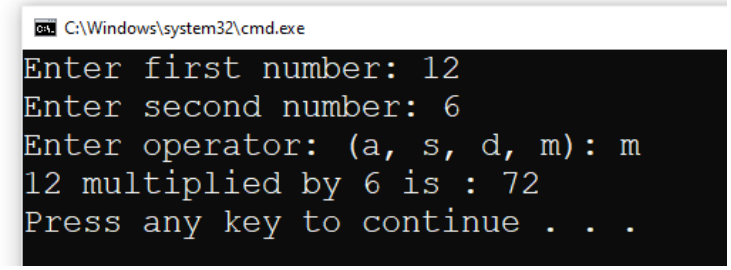
Goal: Create a program in Java outlined below, using a switch statement as required.

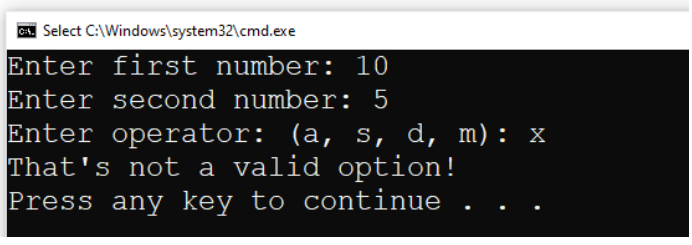
Create a new file called JavaSwitch8 for this exercise. Your program should use a **switch** statement as required. Prompt the user to input two numbers (using Scanner). The numbers entered should be stored to variables called firstNum and secondNum. Your program should also prompt the user to enter an operator as a **char**acter – 'a' for addition, 's' for subtraction, 'd' for division and 'm' for multiplication. The program should then output the result based on the choice of operator, using a switch statement.











Exercise 9

Goal: The goal of this exercise is to design and implement a program that performs a one-time currency conversion. The application will display a menu for the user to select the type of currency conversion. After the user makes a selection, the program will use a `switch` statement to perform the conversion and display the result.

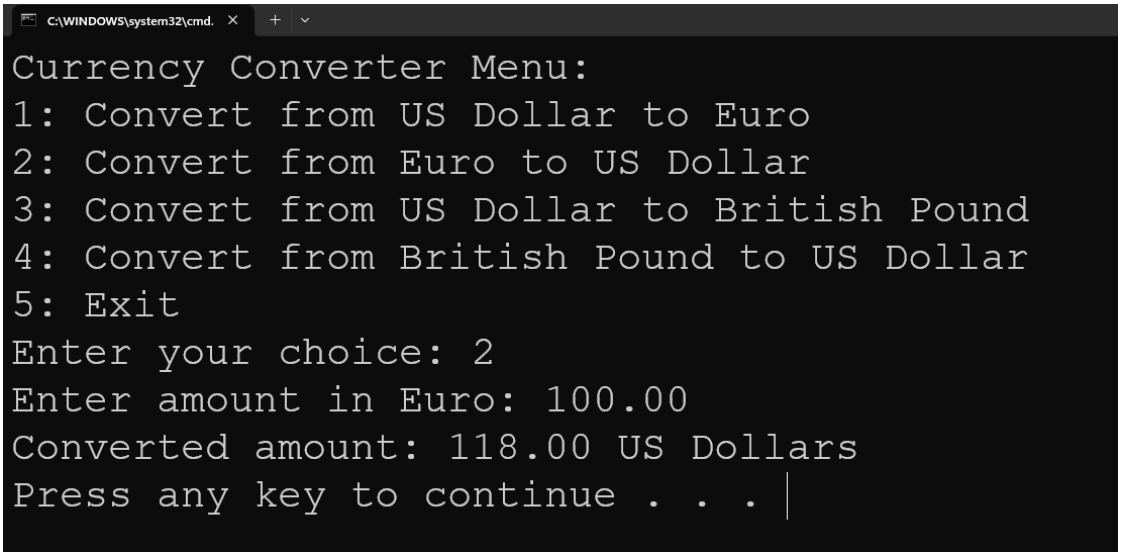
Create a new file called `OneTimeCurrencyConverter` for this exercise.

Instructions:

1. **Create a Java Class:** Initialize a new Java class named `OneTimeCurrencyConverter`.
2. **Define the Main Method:** Include the `main` method in your class to serve as the entry point for your application.
3. **Implement a User Menu:** As soon as the program starts, display a menu with the following options for the user:
    - `1`: Convert from US Dollar to Euro
    - `2`: Convert from Euro to US Dollar
    - `3`: Convert from US Dollar to British Pound
    - `4`: Convert from British Pound to US Dollar
    - `5`: Exit program

    Prompt the user to enter their choice.

4. **Utilize a Switch Statement:** Use a `switch` statement to handle the user's menu selection. For each case in the `switch` statement, do the following:
    - Prompt the user to input an amount to convert.
    - Validate that the input is a positive number.
    - Calculate the converted amount using predefined exchange rates.
    - Output the converted amount rounded to 2 decimal places.
5. **Predefined Exchange Rates:** Use the following exchange rates for currency conversion:
    - 1 US Dollar = 0.85 Euro
    - 1 Euro = 1.18 US Dollar
    - 1 US Dollar = 0.73 British Pound
    - 1 British Pound = 1.37 US Dollar



Exercise 10

Goal: The goal of this exercise is to create a program that simulates a simple gym membership management system. The system should allow users to select different membership types and calculate the cost based on their selection. Utilize a `switch` statement to handle the different membership types.

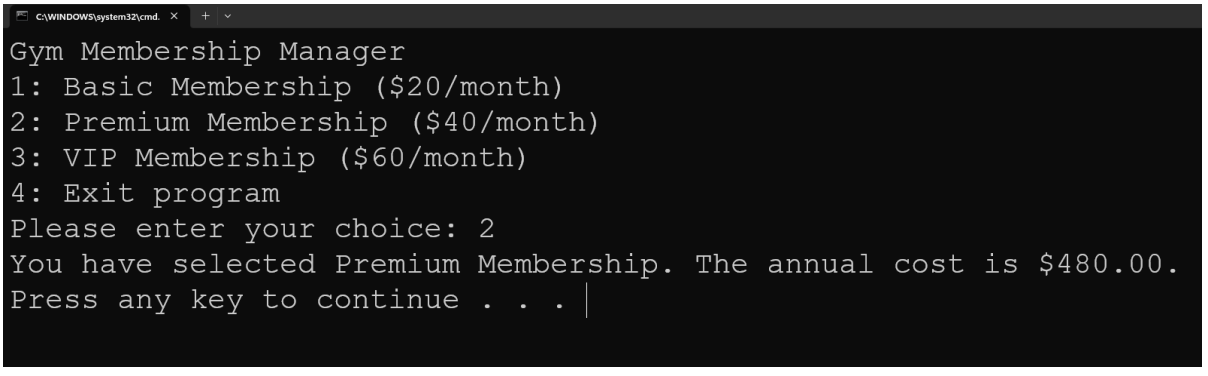
Create a new file called `GymMembershipManager` for this exercise.

Instructions:

1. **Create a Java Class:** Initialize a new Java class named `GymMembershipManager`.
2. **Define the Main Method:** Include the `main` method in your class to serve as the entry point for your application.
3. **Implement a User Menu:** At the beginning of the program, display a menu with the following options for the user:
    - `1`: Basic Membership ($20/month)
    - `2`: Premium Membership ($40/month)
    - `3`: VIP Membership ($60/month)
    - `4`: Exit program

    Prompt the user to enter their choice.

4. **Utilize a Switch Statement:** Use a `switch` statement to handle the user's menu selection. For each case in the `switch` statement, do the following:
    - Confirm the user's choice.
    - Calculate the annual cost based on the monthly rate.
    - Display the annual cost rounded to 2 decimal places.



Exercise 11

Goal: The goal of this exercise is to create a Java program that simulates a basic social media post categorization system. The system should allow users to enter the type of post they are creating and the audience for the post (Public, Friends, Private). Implement `switch` statements to handle both the categorization of posts and the selection of audience type.

Create a new file called `SocialMediaPostCategorizer` for this exercise.

Instructions:

1. **Create a Java Class:** Initialize a new Java class named `SocialMediaPostCategorizer`.
2. **Define the Main Method:** Include the `main` method in your class.
3. **Implement User Input for Post Type:** Prompt the user to enter the type of post they want to categorize. The options should be:
    - `1`: Text Post
    - `2`: Image Post
    - `3`: Video Post
    - `4`: Poll

    Use a `switch` statement to categorize the post based on user input and display an appropriate message for each case.

4. **Implement User Input for Audience Type:** After selecting the post type, prompt the user to specify the audience for the post:
    - `1`: Public
    - `2`: Friends
    - `3`: Private

    Use another `switch` statement to handle the audience selection and display a message confirming the user's selection.