Lab Three

Objectives:

To use Boolean variables
To create selection statements
To work with a menu
To generate random numbers
To use logical operators
To use the switch statement

Assignment:

You will create a new program called **LastNameFirstInitialLab3**. The program will show a user a menu that has 4 choices. The choices will be to add three numbers together; to compare and sort the numbers; to generate 4 random numbers to create a 4-digit PIN, and to test if numbers are above 2, 4, & 6 respectively.

This program does not use any error checking. The expectation is that the user will enter only the numbers from the menu.

Your program must look like the sample. However, your menu can be designed differently. Have fun with it! Use the algorithm to tell you what will be done in what order. You will use a switch statement for the 4 choices.

Your program will have the necessary import statement(s), and the comments for the integrity statement, lab number, and programmer name and course name in the correct places.

In Canvas, go to **Modules > Week Four: September 5 - September 11 > Sort three variables example** to see a good example of a program that does sorting.

Algorithm

KikuchiCLab3

```
    Output words Lab Three
    Output programmers' name
    Output words CSC 130, Sec #
    Output program information
    Get numberOne
    Get numberTwo
    Get numberThree
    Display menu
    Start switch: Get choice
        If choice = 1
            Calculate sum = numberOne + numberTwo + numberThree
            Display sum
        If choice = 2
            if numberTwo < numberOne
                Set temp = numberOne
                Set numberOne = numberTwo
                Set numberTwo = temp
            if numberThree < numberTwo
                Set temp = numberTwo
                Set numberTwo = numberThree
                Set numberThree = temp
            if numberTwo < numberOne
                Set temp = numberOne
                Set numberOne = numberTwo
                Set numberTwo = temp
            Display the numbers in sorted order
        If choice = 3
            Display Generating a 4-digit pin number. Numbers can be duplicated
            Generate randomNumber1
            Generate randomNumber2
            Generate randomNumber3
            Generate randomNumber4
            Display PIN
        If choice = 4
            Set testing = numberOne > 2 and numberTwo > 4 and numberThree > 6
            if testing is true
                Display The numbers are above 2, 4, & 6.
            else
                Display The numbers are not above 2, 4, & 6.
END
```

Note: An algorithm will not include anything about import statements, comments or declarations.

These will be the variables that you will use for this program. There will be no other varaibles used. The variables should be defined in one block of code right under the lines of code that will print the program information.

Name	Data type	Initial value
choice	int	zero
numberOne	int	zero
numberTwo	int	zero
numberThree	int	zero
randomNumber1	int	zero
randomNumber2	int	zero
randomNumber3	int	zero
randomNumber4	int	zero
temp	int	zero
sum	int	zero
testing	boolean	true

Notes:

- Do not worry about formatting or how many decimal places the numbers use.
- Use the sample to see what your program needs to look like. Use the same verbiage.
- Do not go above the objectives of the assignment. I will not expect to see any loops or special formatting for example.
- Since you will be receiving input, you will need to import the Scanner class.
- Make sure your program uses proper indentation and wise use of whitespace. You can select Source from the menu and then select Format. This will automatically help with indentation and some whitespace issues. However, check it yourself afterward to be sure it is as readable as possible.
- The grading rubric is at the end of the assignment.

To Submit this lab:

In Canvas, upload the Java file to the assignment. This will be the file called **LastNameFirstInitialLab3.java**.

SAMPLE RUN SCREENS

First time running the program: Choice 1 on the menu

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This program will ask a user to enter three numbers in the range of 0 to 15.
The user will then be shown a menu that has 4 choices.
Choice 1 will add the three numbers together
Choice 2 will compare and sort the numbers
Choice 3 will generate 4 random numbers to create a 4-digit PIN
Choice 4 will test if numbers are above 2, 4, & 6 respectively

Enter a whole number in the range of 0 to 15: 1
Enter another whole number in the range of 0 to 15: 2
Enter a third whole number in the range of 0 to 15: 3

********** Menu **********
1. Add the three numbers together
2. Compare and sort the numbers
3. Use generated random numbers to create a 4-digit PIN
4. Test if numbers are above 2, 4, & 6
****

Enter your menu choice, 1, 2, 3, or 4: 1
The sum is of 1 + 2 + 3 = 6

Second time running the program: Choice 2 on the menu with 1, 2, 3

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This program will ask a user to enter three numbers in the range of 0 to 15.
The user will then be shown a menu that has 4 choices.
Choice 1 will add the three numbers together
Choice 2 will compare and sort the numbers
Choice 3 will generate 4 random numbers to create a 4-digit PIN
Choice 4 will test if numbers are above 2, 4, & 6 respectively

Enter a whole number in the range of 0 to 15: 1
Enter another whole number in the range of 0 to 15: 2
Enter a third whole number in the range of 0 to 15: 3

********** Menu **********
1. Add the three numbers together
2. Compare and sort the numbers
3. Use generated random numbers to create a 4-digit PIN
4. Test if numbers are above 2, 4, & 6
****

Enter your menu choice, 1, 2, 3, or 4: 2
In sorted order the numbers are: 1 2 3

Third time running the program: Choice 2 on the menu with 15, 2, 10

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This program will ask a user to enter three numbers in the range of 0 to 15.
The user will then be shown a menu that has 4 choices.
Choice 1 will add the three numbers together
Choice 2 will compare and sort the numbers
Choice 3 will generate 4 random numbers to create a 4-digit PIN
Choice 4 will test if numbers are above 2, 4, & 6 respectively

Enter a whole number in the range of 0 to 15: 15
Enter another whole number in the range of 0 to 15: 2
Enter a third whole number in the range of 0 to 15: 10

********** Menu **********
1. Add the three numbers together
2. Compare and sort the numbers
3. Use generated random numbers to create a 4-digit PIN
4. Test if numbers are above 2, 4, & 6
****

Enter your menu choice, 1, 2, 3, or 4: 2
In sorted order the numbers are: 2 10 15

Fourth time running the program: **Choice 3 on the menu with 1, 2, 3**
Note: Notice that the entered numbers have no bearing on this option.

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This program will ask a user to enter three numbers in the range of 0 to 15.
The user will then be shown a menu that has 4 choices.
Choice 1 will add the three numbers together
Choice 2 will compare and sort the numbers
Choice 3 will generate 4 random numbers to create a 4-digit PIN
Choice 4 will test if numbers are above 2, 4, & 6 respectively

Enter a whole number in the range of 0 to 15: 1
Enter another whole number in the range of 0 to 15: 2
Enter a third whole number in the range of 0 to 15: 3

********** Menu **********
1. Add the three numbers together
2. Compare and sort the numbers
3. Use generated random numbers to create a 4-digit PIN
4. Test if numbers are above 2, 4, & 6
****

Enter your menu choice, 1, 2, 3, or 4: 3

Generating a 4-digit pin number. Numbers can be duplicated
Your pin number is: 1669

Fifth time running the program: Choice 4 on the menu with 1, 2, 3

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This program will ask a user to enter three numbers in the range of 0 to 15.
The user will then be shown a menu that has 4 choices.
Choice 1 will add the three numbers together
Choice 2 will compare and sort the numbers
Choice 3 will generate 4 random numbers to create a 4-digit PIN
Choice 4 will test if numbers are above 2, 4, & 6 respectively

Enter a whole number in the range of 0 to 15: 1
Enter another whole number in the range of 0 to 15: 2
Enter a third whole number in the range of 0 to 15: 3

********** Menu **********
1. Add the three numbers together
2. Compare and sort the numbers
3. Use generated random numbers to create a 4-digit PIN
4. Test if numbers are above 2, 4, & 6
****

Enter your menu choice, 1, 2, 3, or 4: 4

The numbers are not above 2, 4, & 6.

Sixth time running the program: **Choice 4 on the menu with 5, 10, 15**

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This program will ask a user to enter three numbers in the range of 0 to 15.
The user will then be shown a menu that has 4 choices.
Choice 1 will add the three numbers together
Choice 2 will compare and sort the numbers
Choice 3 will generate 4 random numbers to create a 4-digit PIN
Choice 4 will test if numbers are above 2, 4, & 6 respectively

Enter a whole number in the range of 0 to 15: 5
Enter another whole number in the range of 0 to 15: 10
Enter a third whole number in the range of 0 to 15: 15

********** Menu **********
1. Add the three numbers together
2. Compare and sort the numbers
3. Use generated random numbers to create a 4-digit PIN
4. Test if numbers are above 2, 4, & 6
****

Enter your menu choice, 1, 2, 3, or 4: 4

The numbers are above 2, 4, & 6.