CIS 36A – 6th In Class / Take Home Assignment – **10 Points**

Student Name KaChi Lau **Student ID** 10819338 **Point Total**

Pages 77 -93 ***Java Programming A Comprehensive Introduction***

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What is the if / else ladder?

a secondary path of execution when an "if" clause evaluates to `false`.

What is a nested if?

using one IF Function inside another

Switch-(Pg.84 in Java Programming)-

switch (*expression*) {

case constant 1:

statement sequence

break

How does break work differently in a switch statement after a case statement, than in a normal conditional statement?-

Break can exit the swtich statement

Format Specifier- the sequence passed as the formatting string argument; "Characters matched" gives the format of the sequence sought or printed, with a hyperlink to the section on literals which applies to that format;

" %.2f "- Describe what the statement is saying-

Print 2 decimal

"%n"- Describe what the statement is saying-

Next line

System.out.format("%.2f%n", b + a); // Example of code

System.out.format(…); Explain how this method differs from System.out.println

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The system.out.format consists of static text embedded with format specifiers; except for the format specifiers, the format string is output unchanged. And the System.out.println only print what inside the parenthesis.

Programming Assignments

1st Task: Create a program that uses a **switch** statement and **case** statements to calculate the number of days in any given month based upon a users input.

February is a unique month. So the **case** for February will need a **if**… **else** to capture the two possible options for the number of days in February based upon leap year.

Hint***. You will need to use some of the code from Assignment 4, Task 3.

Use the **new** Scanner (System.in); method for input. Make sure the program can deal with any integer input. If a number entered does not correspond to a month of the year print “Invalid Month.”

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```
1
2
3   package javaapplication1;
4
5   import java.util.Scanner;
6
7   public class JavaApplication1 {
8
9       public static void main(String[] args) {
10          Scanner input = new Scanner(System.in);
11          System.out.print("Enter your month: ");
12          int month = input.nextInt();
13
14
15          switch (month) {
16              case 0:
17                  System.out.println("Invalid month");
18                  break;
19              case 1:
20                  System.out.println("Januray has 31 days");
21                  break;
22              case 2:
23                  System.out.print("Since there have leap year, "
24                          + "please enter the year:");
25                  int year = input.nextInt();
26
27                  boolean leapyear = ((year % 4 == 0) && (year % 100 != 0) || year % 400 == 0);
28
29                  if(leapyear) {
30                      System.out.println("Februnary has 29 days");
31                  } else {
32                      System.out.println("Februnary has 28 days");
33                  }
34                  break;
35              case 3:
36                  System.out.println("March has 31 days");
37                  break;
38              case 4:
39                  System.out.println("April has 30 days");
40                  break;
41              case 5:
42                  System.out.println("May has 31 days");
43                  break;
```

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```
44                  case 6:
45                      System.out.println("June has 30 days");
46                      break;
47                  case 7:
48                      System.out.println("July has 31 days");
49                      break;
50                  case 8:
51                      System.out.println("August has 31 days");
52                      break;
53                  case 9:
54                      System.out.println("September has 30 days");
55                      break;
56                  case 10:
57                      System.out.println("October has 31 days");
58                      break;
59                  case 11:
60                      System.out.println("November has 30 days");
61                      break;
62                  case 12:
63                      System.out.println("December has 31 days");
64                      break;
65                  default:
66                      System.out.println("Invalid month");
67
68              }
69
70          }
71
72      }
73
```

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```
1
2
3   package javaapplication1;
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5   import java.util.Scanner;
6
7   public class JavaApplication1 {
8
9       public static void main(String[] args) {
10          Scanner input = new Scanner(System.in);
11          System.out.print("Enter your month: ");
12          int month = input.nextInt();
13
14
15          switch (month) {
16              case 0:
17                  System.out.println("Invalid month");
18                  break;
19              case 1:
20                  System.out.println("Januray has 31 days");
21                  break;
22              case 2:
23                  System.out.print("Since there have leap year, "
24                          + "please enter the year:");
25                  int year = input.nextInt();
26
27                  boolean leapyear = ((year % 4 == 0) && (year % 100 != 0) || year % 400 == 0);
```

JavaApplication1 > main > switch (month) > case 2: > if (leapyear) >

Output - JavaApplication1 (run)

```
run:
Enter your month: 1
Januray has 31 days
BUILD SUCCESSFUL (total time: 7 seconds)
```

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```
34                  break;
35              case 3:
36                  System.out.println("March has 31 days");
37                  break;
38              case 4:
39                  System.out.println("April has 30 days");
40                  break;
41              case 5:
42                  System.out.println("May has 31 days");
43                  break;
44              case 6:
45                  System.out.println("June has 30 days");
46                  break;
47              case 7:
48                  System.out.println("July has 31 days");
49                  break;
50              case 8:
51                  System.out.println("August has 31 days");
52                  break;
53              case 9:
54                  System.out.println("September has 30 days");
55                  break;
56              case 10:
57                  System.out.println("October has 31 days");
58                  break;
59              case 11:
60                  System.out.println("November has 30 days");
```

JavaApplication1 > main > switch (month) > case 10:

Output - JavaApplication1 (run)

```
run:
Enter your month: 2
Since there have leap year, please enter the year:2000
Februnary has 29 days
BUILD SUCCESSFUL (total time: 7 seconds)
```

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```
34                  break;
35              case 3:
36                  System.out.println("March has 31 days");
37                  break;
38              case 4:
39                  System.out.println("April has 30 days");
40                  break;
41              case 5:
42                  System.out.println("May has 31 days");
43                  break;
44              case 6:
45                  System.out.println("June has 30 days");
46                  break;
47              case 7:
48                  System.out.println("July has 31 days");
49                  break;
50              case 8:
51                  System.out.println("August has 31 days");
52                  break;
53              case 9:
54                  System.out.println("September has 30 days");
55                  break;
56              case 10:
57                  System.out.println("October has 31 days");
58                  break;
59              case 11:
60                  System.out.println("November has 30 days");
```

JavaApplication1 > main > switch (month) > case 8:

Output - JavaApplication1 (run)

```
run:
Enter your month: 2
Since there have leap year, please enter the year:1999
Februnary has 28 days
BUILD SUCCESSFUL (total time: 4 seconds)
```

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```
43                  break;
44              case 6:
45                  System.out.println("June has 30 days");
46                  break;
47              case 7:
48                  System.out.println("July has 31 days");
49                  break;
50              case 8:
51                  System.out.println("August has 31 days");
52                  break;
53              case 9:
54                  System.out.println("September has 30 days");
55                  break;
56              case 10:
57                  System.out.println("October has 31 days");
58                  break;
59              case 11:
60                  System.out.println("November has 30 days");
61                  break;
62              case 12:
63                  System.out.println("December has 31 days");
64                  break;
65              default:
66                  System.out.println("Invalid month");
67
68          }
69
```

JavaApplication1 > main > switch (month) > case 8:

Output - JavaApplication1 (run)

```
run:
Enter your month: 13
Invalid month
BUILD SUCCESSFUL (total time: 2 seconds)
```

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2st Task: Using **If** and **else** ladder. Write a program that computes a single filer's income tax burden.

TAX RATE	Single Filers Income
10%	Up to $6000
15%	$6,001 - $27,950
27%	$27,951 - $67,700
30%	$67,701 - $141,250
35%	$141,251 - $307,050
38.6%	$307, 051 or more

The user should be able input his data into a JOptionPane.showInputDialog "pop up box"

The output can be a simple system.println output.

Sample Output- //Output should have proper formatting for dollars, 2 decimal places

Income tax for a single person making $85000.00 is $25500.00

Income tax for a single person making $9800.00 is $1470.00

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```
1
2
3   package javaapplication1;
4
5   import java.util.Scanner;
6
7   public class JavaApplication1 {
8
9       public static void main(String[] args) {
10          Scanner input = new Scanner(System.in);
11
12          System.out.print("Enter you tax: ");
13          Double tax = input.nextDouble();
14
15          if(tax < 0) {
16              System.out.println(" You entered a negative value!");
17           }
18
19          if(tax >= 0) {
20              if(tax < 6001) {
21                  tax = tax * 0.10;
22                  System.out.format("Your tax is %.2f", tax);
23                  System.out.println("");
24              }
25              if((tax >= 6001) && (tax <= 27950)) {
26                  tax = tax * 0.15;
27                  System.out.format("Your tax is %.2f", tax);
28                  System.out.println("");
29
30              }
31              if((tax >= 27951) && (tax <= 67700)) {
32                  tax = tax * 0.27;
33                  System.out.format("Your tax is %.2f", tax);
34                  System.out.println("");
35
36              }
37              if((tax >= 67701) && (tax <= 141250)) {
38                  tax = tax * 0.30;
39                  System.out.format("Your tax is %.2f", tax);
40                  System.out.println("");
41
42              }
```

```
42                  }
43                  if((tax >= 141251) && (tax <= 307050)) {
44                      tax = tax * 0.35;
45                      System.out.format("Your tax is %.2f", tax);
46                      System.out.println("");
47
48                  }
49                  if(tax > 307051) {
50                      tax = tax * 0.386;
51                      System.out.format("Your tax is %.2f", tax);
52                      System.out.println("");
53
54                  }
55              }
56
57      }
58
59  }
60
```

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```
4
5   import java.util.Scanner;
6
7   public class JavaApplication1 {
8
9       public static void main(String[] args) {
10          Scanner input = new Scanner(System.in);
11
12          System.out.print("Enter you tax: ");
13          Double tax = input.nextDouble();
14
15          if(tax < 0) {
16              System.out.println(" You entered a negative value!");
17           }
18
19          if(tax >= 0) {
20              if(tax < 6001) {
21                  tax = tax * 0.10;
22                  System.out.format("Your tax is %.2f", tax);
23                  System.out.println("");
24              }
25              if((tax >= 6001) && (tax <= 27950)) {
26                  tax = tax * 0.15;
27                  System.out.format("Your tax is %.2f", tax);
28                  System.out.println("");
29
30              }
31              if((tax >= 27951) && (tax <= 67700)) {
32                  tax = tax * 0.27;
33                  System.out.format("Your tax is %.2f", tax);
34                  System.out.println("");
35
```

JavaApplication1 > main > if (tax >= 0)

Output - JavaApplication1 (run)

```
run:
Enter you tax: 85000.00
Your tax is 25500.00
BUILD SUCCESSFUL (total time: 17 seconds)
```

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```
4
5   import java.util.Scanner;
6
7   public class JavaApplication1 {
8
9       public static void main(String[] args) {
10          Scanner input = new Scanner(System.in);
11
12          System.out.print("Enter you tax: ");
13          Double tax = input.nextDouble();
14
15          if(tax < 0) {
16              System.out.println(" You entered a negative value!");
17           }
18
19          if(tax >= 0) {
20              if(tax < 6001) {
21                  tax = tax * 0.10;
22                  System.out.format("Your tax is %.2f", tax);
23                  System.out.println("");
24              }
25              if((tax >= 6001) && (tax <= 27950)) {
26                  tax = tax * 0.15;
27                  System.out.format("Your tax is %.2f", tax);
28                  System.out.println("");
29
30              }
                if((tax >= 27951) && (tax <= 67700)) {
32                  tax = tax * 0.27;
33                  System.out.format("Your tax is %.2f", tax);
34                  System.out.println("");
35
```

JavaApplication1 > main > if (tax >= 0) > if ((tax >= 27951) && (tax <= 67700)) >

Output - JavaApplication1 (run)

```
run:
Enter you tax: 9800.00
Your tax is 1470.00
BUILD SUCCESSFUL (total time: 7 seconds)
```

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3rd Task- Write a program that prompts a user to enter the points earned for a course and determines the grade based upon the following scale.

0 – 59 is a F **Print:** Try Harder

60 – 69 is a D **Print:** Try Harder

70 – 79 is a C **Print:** OK

80 – 89 is a B **Print:** Good

90 and greater is an A. Print: Excellent

Use the **If / Else** ladder to create the source code. Use **switch** statements to print the message strings.

The user should be able input his data into a JOptionPane.showInputDialog "pop up box."

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```
package javaapplication1;

import javax.swing.JOptionPane;

public class JavaApplication1 {

    public static void main(String[] args) {
       String input = JOptionPane.showInputDialog(null, "Number","Input",
               JOptionPane.INFORMATION_MESSAGE);

       if(input == null) {
          JOptionPane.showMessageDialog(null, "You clicked X, The program is exit now!", "OUTPUT ",
                  JOptionPane.INFORMATION_MESSAGE);
           System.exit(0);
        }

        if(input.length() == 0) {
           JOptionPane.showMessageDialog(null, "You didn't input any value!", "OUTPUT ",
                   JOptionPane.INFORMATION_MESSAGE);
           System.exit(0);
        }

       int point = Integer.parseInt(input);

       int grade = 0;

       if (point >= 0 && point <= 59) {
          grade = 0;
       } else if (point >= 60 && point <= 69) {
          grade = 1;
       } else if (point >= 70 && point < 79) {
          grade = 2;
       } else if (point >= 80 && point < 89) {
          grade = 3;
       } else if (point >= 90) {
          grade = 4;
       }

        switch (grade) {
            case 0:
                System.out.println("Trying Harder");
                break;
            case 1:
                System.out.println("Trying Harder");
                break;
            case 2:
                System.out.println("OK");
                break;
            case 3:
                System.out.println("Good");
                break;
            case 4:
                System.out.println("Excellent");
                break;

            default:
                System.out.println("unexpected input");

        }

    }

}
```

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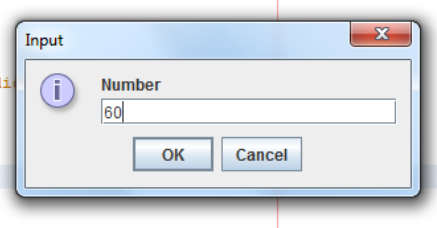
```
1
2
3   package javaapplication1;
4
5   import javax.swing.JOptionPane;
6
7   public class JavaApplication1 {
8
9       public static void main(String[] args) {
10          String input = JOptionPane.showInputDialog(null, "Number","Input",
11                  JOptionPane.INFORMATION_MESSAGE);
12
13          if(input == null) {
14              JOptionPane.showMessageDialog(null, "You clicked X, The program is exit now!", "OUTPUT ",
15                      JOptionPane.INFORMATION_MESSAGE);
16              System.exit(0);
17           }
18
19           if(input.length() == 0) {
20              JOptionPane.showMessageDialog(null, "You di
21                      JOptionPane.INFORMATION_MESSAGE);
22              System.exit(0);
23           }
24
25          int point = Integer.parseInt(input);
26
27          int grade = 0;
28
29          if (point >= 0 && point <= 59) {
```




```
1
2
3   package javaapplication1;
4
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6
7   public class JavaApplication1 {
8
9       public static void main(String[] args) {
10          String input = JOptionPane.showInputDialog(null, "Number","Input",
11                  JOptionPane.INFORMATION_MESSAGE);
12
13          if(input == null) {
14              JOptionPane.showMessageDialog(null, "You clicked X, The program is exit now!", "OUTPUT ",
15                      JOptionPane.INFORMATION_MESSAGE);
16              System.exit(0);
17           }
18
19           if(input.length() == 0) {
20              JOptionPane.showMessageDialog(null, "You didn't input any value!", "OUTPUT ",
21                      JOptionPane.INFORMATION_MESSAGE);
22              System.exit(0);
23           }
24
25          int point = Integer.parseInt(input);
26
27          int grade = 0;
28
29          if (point >= 0 && point <= 59) {
```

JavaApplication1 > main >

Output - JavaApplication1 (run)

```
run:
Trying Harder
BUILD SUCCESSFUL (total time: 40 seconds)
```

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```
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3   package javaapplication1;
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5   import javax.swing.JOptionPane;
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7   public class JavaApplication1 {
8
9       public static void main(String[] args) {
10          String input = JOptionPane.showInputDialog(null, "Number","Input",
11                  JOptionPane.INFORMATION_MESSAGE);
12
13          if(input == null) {
14              JOptionPane.showMessageDialog(null, "You clicked X, The program is exit now!", "OUTPUT ",
15                      JOptionPane.INFORMATION_MESSAGE);
16              System.exit(0);
17           }
18
19           if(input.length() == 0) {
20              JOptionPane.showMessageDialog(null, "You di
21                      JOptionPane.INFORMATION_MESSAGE);
22              System.exit(0);
23           }
24
25          int point = Integer.parseInt(input);
26
27          int grade = 0;
28
29          if (point >= 0 && point <= 59) {
```

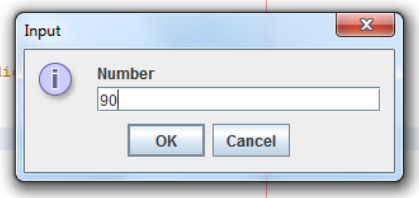


```
1
2
3   package javaapplication1;
4
5   import javax.swing.JOptionPane;
6
7   public class JavaApplication1 {
8
9       public static void main(String[] args) {
10          String input = JOptionPane.showInputDialog(null, "Number","Input",
11                  JOptionPane.INFORMATION_MESSAGE);
12
13          if(input == null) {
14              JOptionPane.showMessageDialog(null, "You clicked X, The program is exit now!", "OUTPUT ",
15                      JOptionPane.INFORMATION_MESSAGE);
16              System.exit(0);
17           }
18
19           if(input.length() == 0) {
20              JOptionPane.showMessageDialog(null, "You didn't input any value!", "OUTPUT ",
21                      JOptionPane.INFORMATION_MESSAGE);
22              System.exit(0);
23           }
24
25          int point = Integer.parseInt(input);
26
27          int grade = 0;
28
29          if (point >= 0 && point <= 59) {
```

JavaApplication1 > main > if (input.length() == 0)

Output - JavaApplication1 (run)

```
run:
Excellent
BUILD SUCCESSFUL (total time: 32 seconds)
```