Name: _____ Student ID: _____ Date: _____

Worksheet 7

If…else if… and *switch* statements

Objectives

After completing this worksheet, you should be able to

- Understand the concept of conditional control structure
- Make decisions with ***if…else if…*** structure
- Comprehend the usage of ***switch*** statement

1. Open a new project, write program 7.1.

```
#include <stdio.h>
#include <stdlib.h>
int  main(int  argc,  char  **argv)
{
    int  score;
    char  grade;
    printf("Enter your score :   ");
    scanf("%d", &score);
    if(score >= 0 && score <= 50)
        grade = 'F';
    if(score >= 51 && score <= 60)                    ----------①
        grade = 'D';
    if(score >= 61 && score <= 70)                    ----------②
        grade = 'C';
    if(score >= 71 && score <= 80)                    ----------③
        grade = 'B';
    if(score >= 81 && score <= 100)                   ----------④
        grade = 'A';
    printf("Grade = %c", grade);

    return  0;
}
```

Program 7.1

Run the program and try to enter an input value for each running as follows: **100, 80, 75, 70, 59, 50, 10, 1, 0**. Observe the results.

2. From Program 7.1, replace the ***if*** statement in ①, ②, ③ and ④ with ***else if***. Then rerun the program and try to enter an input value for each running as follows: **100, 80, 75, 70, 59, 50, 10, 1, 0**. Observe the results.

Did they produce the same results? What are they different? Explain.

_____

_____

_____

_____

From Program 7.1 and its modified version, answer the following question.

- If we need to display the string "Your grade is B" We must enter .....
- If we need to display the string "Your grade is F" We must enter .....

3. Open a new project and write program 7.2.

```
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char *argv[ ]) {
        int num;
        printf("Please enter a number : ");
        scanf("%d",&num);
        switch(num) {
                case 0 : printf("Your number is 0\n");        break;
                case 1 : printf("Your number is 1\n");        break;
                case 2 : printf("Your number is 2\n");        break;
                case 3 : printf("Your number is 3\n");        break;
                case 4 : printf("Your number is 4\n");        break;
                case 5 : printf("Your number is 5\n");        break;









        }
        return 0;
}
```

Program 7.2

4. Enter the input values shown in Table 7.1 and record the results.

Input Value	Result from STEP 3.	Result from STEP 6.
10		
6		
5		
4		
3		
2		
1		
0		

Table 7.1

5. From Program 7.2, if we would like to modify the program to warn the user for entering values out of range 0 – 5, **what statements should be inserted into the program? (You can directly insert appropriate statements into the blanks of Program 7.2)**

6. From program 7.2, delete every "**break;**" statement from the program and rerun the program. Then enter the input values in Table 7.1 and record the results.
   Why is the result, produced from step 3 and 5, different?

7. Open a new project and write program 7.3. Then enter the input values shown in Table 7.2 and record the results.

```
#include <stdio.h>          // This program will detect an input character provided by users
#include <stdlib.h>                    // whether it is a vowel or not.
int main(int argc, char *argv[ ])
{
        char ch;
        printf("Please enter a character : ");
        ch = getchar();
        switch(ch) {
                case 'a' :
                case 'e' :
                case 'i' :
                case 'o' :
                case 'u' : printf("It is a vowel.\n");    break;
                default   : printf("It is not a vowel.\n");
        }

        return 0;
}
```

Program 7.3

Input Character	Result from Step 7.
a	
e	
i	
o	
u	
z	
5	
+	
y	
#	

Table 7.2

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Homework 7

1. Write a program that compute the value of resistance, current or voltage in accordance with Ohm's law. Given that the program must be displayed the output as follow:

   ========== Ohm's Law ==========

   1. Calculate Resistance.
   2. Calculate Current.
   3. Calculate Voltage.
   4. Exit

   Please Select =====> ***3*** Users select the item (1 - 4)

   Current Value: ***10*** Users enter the value of current

   Resistance Value: ***5*** Users enter the value of resistance

   Voltage Value: 50 The program calculates and displays the voltage's value.

   For the example above, suppose that users need to calculate the value of voltage (select 3). Then the program shows messages in order to get a value of current and resistance (If users select other items, the program must display other messages, corresponding to the selected item, that get the pertinent input values). Then the value of Voltage is displayed. In case that the item 4 is selected, the message "Exit to DOS" will be displayed. (Hint: use **switch()** statement)