Computer Programming Laboratory	
Laboratory 5: Making Decision Part2	**School of Information Technology**
Name:	**ID:**	**Section:**

Course Learning Outcomes (CLO)

1. **CLO1.1:** Students do their own work, do not present the work of others as their own, do not cheat on exams, and are responsible for completing their work.
2. **CLO2.3:** Students understand the principles of programming including emerging technology, and how to utilize them together.
3. **CLO6.1:** Students are able to complete their assigned work for each particular concept.

Lesson Learning Outcomes (LLOs)

● **LLO1:** Understand the concept of *nested if* in C# and how they are used to create complex decision-making logic [Aligns with CLO2.3].
● **LLO2:** Understand the concept of *switch statements* in C# for making decisions based on conditions [Aligns with CLO2.3].

Lab Objectives

● Develop programs to use *nested if to* handle multiple conditions and make complex decisions [Aligns with CLO2.3 and CLO6.1].
● Develop programs to use *switch statements* to check conditions and execute appropriate code blocks [Aligns with CLO2.3 and CLO6.1].

Remark:

● **CLO ☐ LLO ☐ Lab Objectives**
● Students are expected to complete the lab on their own, with no plagiarism or cheating [Aligns with **CLO1.1**].

Instruction:

● Complete and answer all required questions: **In-class (Questions 1-3) and Homework (Question 1)**

Submission:

● Save this document file that contains all required answers as "**Lab05_YourID.pdf**" and submit it to the MFU LMS system by the deadline.

💎Learn more (Self-study):

● **if else ☐ https://www.w3schools.com/cs/cs_conditions.php**
● **switch ☐ https://www.w3schools.com/cs/cs_switch.php**

Remark:

- **Not accept late submission!!!**

Concept: nested if

Given the following code, answer Question 1:

```csharp
using System;
namespace ConsoleAppLab5Q1
{
    class Program
    {
        static void Main(string[] args)
        {
            //Prepare
            int money = 0;

            //Input
            Console.Write("Enter amount of money to withdraw: ");
            money = Convert.ToInt32(Console.ReadLine());

            //Process + Output
            if (money > 0)
            {
                Console.WriteLine("You want to withdraw {0} Baht", money);
            }
            else
            {
                Console.WriteLine("Money must be more than 0.");
            }
        }
    }
}
```

[In-class] Question 1

Instruction: Show the result if you enter the amount of money as follows:
   a) **15000**
   b) **-20**

a) **15000**

b) -20

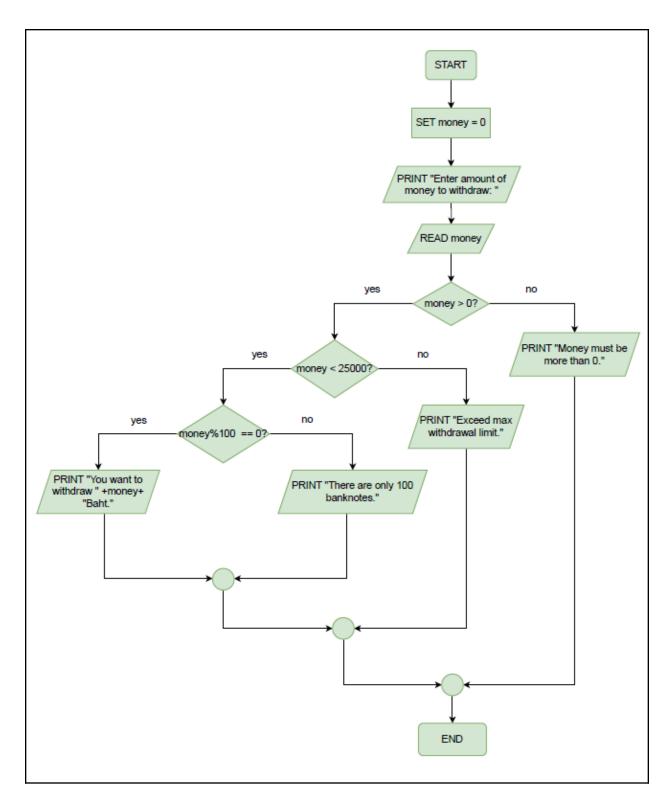## [In-class] Question 2

Instruction: Modify the previous source code to get the expected results below using the nested if-else statement.

Remark: To withdraw the money, there are only 100 banknotes.

Flowchart

Expected Results

Example 1

```
Enter amount of money to withdraw: 15000
You want to withdraw 15000 Baht.
```

Example 2
```
Enter amount of money to withdraw: -20
Money must be more than 0.
```

Example 3
```
Enter amount of money to withdraw: 90
There are only 100 banknotes.
```

Example 4
```
Enter amount of money to withdraw: 25000
Exceed max withdrawal limit.
```

Answer: source code

```csharp
using System;
namespace ConsoleAppLab5Q1
{
    class Program
    {
        static void Main(string[] args)
        {
            //Prepare
            int money = 0;

            //Input
            Console.Write("Enter amount of money to withdraw: ");
            money = Convert.ToInt32(Console.ReadLine());

            //Process + Output
            if (money > 0)
            {
                if (money < 25000)
                {
                    if (money % 100 == 0)
                    {
                        Console.WriteLine("You want  to withdraw {0} Baht", money);
                    }
                    else
                    {
```

```
                Console.WriteLine("There are only 100 banknotes");
            }
        }
        else
        {
            Console.WriteLine("Exceed max withdrawal limit");
        }
    }
    else
    {
        Console.WriteLine("Money must be more than 0.");
    }
  }
 }
}
```
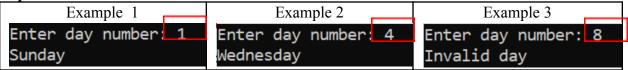
Concept: switch

[In-class] Question 3

Instruction: Write a program to show the day by inputting the day number using the "switch" statement.

Expected Results

Example 1	Example 2	Example 3
Enter day number: 1 Sunday	Enter day number: 4 Wednesday	Enter day number: 8 Invalid day

Answer: source code

```csharp
using System;

namespace DaysOfWeek
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Write the numbers between 1-7:  ");
            int dnum = Convert.ToInt32(Console.ReadLine());

            switch (dnum) {
```

```
        case 1: Console.WriteLine("Sunday");
           break;
        case 2:
           Console.WriteLine("Monday");
           break;
        case 3:
           Console.WriteLine("Tuesday");
             break;
        case 4:
           Console.WriteLine("Wednesday");
           break;
        case 5:
           Console.WriteLine("Thursday");
           break;
        case 6:
           Console.WriteLine("Friday");
           break;
        case 7:
           Console.WriteLine("Saturday");
           break;
        default:
           Console.WriteLine("Invalid day number. Please enter a number between 1 and
7.");

             break;

      }

    }
   }
}
```
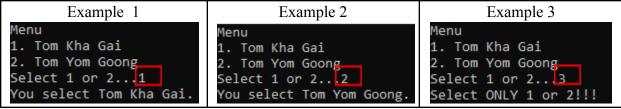
[Homework] Question 1

Information:

Picture credit: eng-panda.com

Instruction: Given the expected results below, write a program that uses the "switch" statement to display two Thai food menus, asks the user to choose, and then displays the results of the selection.

Expected Results

Example 1	Example 2	Example 3
Menu 1. Tom Kha Gai 2. Tom Yom Goong Select 1 or 2...1 You select Tom Kha Gai.	Menu 1. Tom Kha Gai 2. Tom Yom Goong Select 1 or 2..2 You select Tom Yom Goong.	Menu 1. Tom Kha Gai 2. Tom Yom Goong Select 1 or 2...3 Select ONLY 1 or 2!!!

Answer: source code

```
using System;

namespace ThaiMenu
{
    class program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Menu");
            Console.WriteLine("1. Tom Kha Gai");
            Console.WriteLine("2. Tom Yum Goong");

            Console.WriteLine("Select the menu : ");
            int sele = Convert.ToInt32(Console.ReadLine());

            switch (sele)
            {
                case 1:
                    Console.WriteLine("You select the Tom Kha Gai");
                    break;
```

```
          case 2:
              Console.WriteLine("You select the Tom Yum Goong");
              break;
          default:
              Console.WriteLine("Select Only 1 or 2!!!");
              break;
      }

   }
  }
}
```

[Optional Question – Challenge] - This part is not required for completion and submission.

Question #1:

Instructions: Suppose that there are two places to eat: a noodle shop and a burger shop. The first shop charges 23 baht for a noodle. The second shop charges 47 baht for a burger.

Write the program to
- Ask the user "how much money do they have? …"
- Give two options for food shops to choose from.
- At the first shop, the owner has
  o 50 Baht banknotes
  o 20 Baht banknotes
  o 1-baht coins
- At the second shop, the owner has
  o 20 Baht banknotes
  o 5-baht coins
  o 1-baht coins
- **Calculate the change** for each shop and display the result, as in **Example 1** or **Example 2** (Assume that the owner will always give the largest banknote first.)
- If users **do not have enough money** for either the first or second shop, show the result as in **Example 3**.
- For shop selection ("Select 1 or 2…"), **if users enter other numbers**, show the result as in **Example 4**.

Expected Results

```
                     Example 1
How much money do you have?...100
---Food Shop---
1. Noodle (23 Baht)
2. Burger (47 Baht)
Select 1 or 2...1
You select noodle. This is 23 Baht.
You pay 100.
You get change for 77 Baht.
You get 1 Fifty-baht banknote.
You get 1 Twenty-baht banknote.
You get 7 one-baht coin.
```

Example 2

```
How much money do you have?...100
---Food Shop---
1. Noodle (23 Baht)
2. Burger (47 Baht)
Select 1 or 2...2
You select burger. This is 47 Baht.
You pay 100.
You get change for 53 Baht.
You get 2 Twenty-baht banknote.
You get 2 five-baht coin.
You get 3 one-baht coin.
```

Example 3

```
How much money do you have?...20
---Food Shop---
1. Noodle (23 Baht)
2. Burger (47 Baht)
Select 1 or 2...1
You select noodle. This is 23 Baht.
You do not have enough money.
```

Example 4

```
How much money do you have?...100
---Food Shop---
1. Noodle (23 Baht)
2. Burger (47 Baht)
Select 1 or 2...3
Select ONLY 1 or 2.
```

Answer: source code

<div style="border:1px solid black; min-height:800px;"></div>

💎**Learn more (Self-study):**
- **if else** ☐ **https://www.w3schools.com/cs/cs_conditions.php**
- **switch** ☐ **https://www.w3schools.com/cs/cs_switch.php**