DASF004: Basic and Practice in Programming

- Lab 1: Program Sequencing and Control

In this lab ...

- Program Sequencing and Control
- How to write simple logic in C
  - » Variable declaration and assignment
  - » Variable type
  - » `printf()` and `scanf()`
- What you need to submit in this lab (Lab #1):
  - » Lab Exercise #1 before the end of today (11:59 pm)
  - » Assignment #1 by Tuesday 11:59 pm

Three VERY important rules for programming!!

1)Backup your code
2)Backup your code, again!
3)Backup your code, once more!!!

And save multiple version of your backup as you progress (e.g. “lab1.v1.0.c”, “lab1.v1.1.c”, “lab1.v2.0.c”, etc)

- So that you can backtrack any potential mistakes/bugs

Comment

- Programmer’s note in the code
- Not being translated by the compiler
- Written in natural language to explain the code (e.g. English, or Korean)
- Very useful for debugging

Comment(cont.)

- Single line comment

```
printf(“Hello, World!”); // Print out Hello, World!
```

- Multi line comment

```
/*  This program is written by Arthur Tang.
    Student ID: A12345678 */
int main(void)
{ printf(“Hello, World!”); // Print out Hello, World!
  return 0;
}
```

Variables and Variables Assignment

- Variable: A memory that stores a value
- Basic variable type:
  - `int` – integer
  - `float` – float point number
  - `char` – a single character
- To declare an integer variable i:
  - `int i;`
- To assign a value to the variable i:
  - `i = 1;`
  - Note: you can only assign value to a declared variable

Variables and Variables Assignment

- You can declare a variable and assign its initial value:

```
» int i = 1;
```

- You can reassign a new value to a variable:

```
» int i = 2;
» i = 4;
```

- You cannot declare a variable that already exists:

```
» int i = 2;
» i = 4;
» int i = 6;    // ERROR!!!
```

- Name your variable something meaningful:

```
» int i = 5;                    // Meaningless name!
» int midterm_score = 80;       // Meaningful name!
```

Variables Type

- Basic Variable Type
  - » `int, float, char`
- Integer Division
  - » `int x = 7;`
  - » `int y = 2;`
  - » `float z = x / y;  // z = 3`

Assignment and Expression

- Arithmetic Operators:
  - `+ - * /` add; sub; multiply; divide
  - `%` modules (i.e. remainder)

Print out the value of variables

- Use the `printf()` function from `stdio.h` library

```
int x = 10;
float y = 1.5;
char z = 'A';
printf("The value of x is: %d\n", x);
printf("The value of y is: %f\n", y);
printf("The value of z is: %c\n", z);
printf("All: %d, %f, %c\n", x, y, z);
```

- %d – decimal value
- %f – float point value
- %c – character

Try this out ……

- Write a program to perform the following task:
  - » Declare an integer variable named `Number_1` with an initial value 5
  - » Declare an integer variable named `Number_2` with an initial value 2
  - » Declare an integer variable name `Sum`
  - » Calculate the value of `Number_1 + Number_2`, assign the result to `Sum`
  - » Print out the value of `Sum`

Taking input from user

- Use the `scanf()` function from `stdio.h` library

```
int x;                                  // Declare variable x
printf("Input the value of x: ");           // Prompt user for input
scanf("%d", &x);                        // Assign user input to x
printf("The value of x is: %d\n", x);   // Print out value of x
```

Lab Exercise

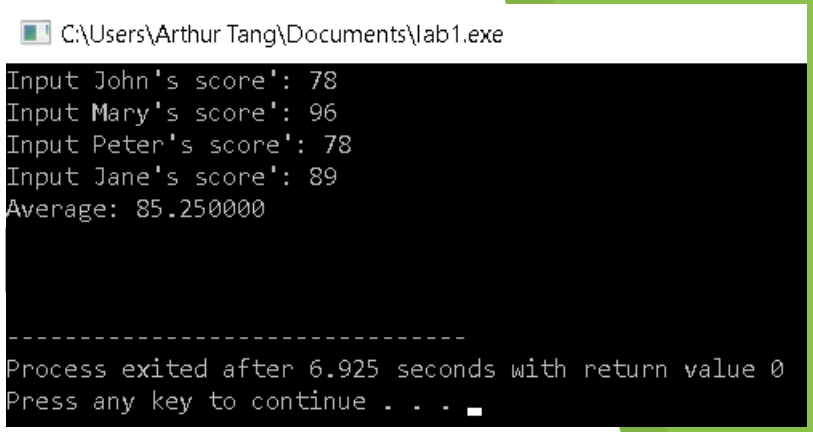
- Write a program to perform the following task:
  - Declare an integer variable named `Number_1`
  - Declare an integer variable named `Number_2`
  - Prompt user to enter an integer and assign the value to `Number_1`
  - Prompt user to enter an integer and assign the value to `Number_2`
  - Declare an integer variable name `Sum`
  - Calculate the value of `Number_1 + Number_2`, assign the result to `Sum`
  - Print out the value of `Sum`

- Submit the **source code** on iCampus before the end of today: 23:59 pm

Lab Assignment #1: Sequence Control

Write a program to perform the following sequence:

1) Prompt the user to input John's score (integer).
2) Prompt the user to input Mary's score (integer).
3) Prompt the user to input Peter's score (integer).
4) Prompt the user to input Jane's score (integer).
5) Calculate and display the average score of the class (float).



Lab Assignment #1: Sequence Control

Deadline: Tuesday 23:59 pm
Submit to iCampus

Submit your **source code** only

- Do not submit the compiled executable file
- Do not submit the outcome of your program
- Do not submit screenshot(s)