HCMC UNIVERSITY OF TECHNOLOGY, VNU-HCM
Faculty of Computer Science and Engineering

Lab 2

In this week, we practice implementing in C++ small code with given input and output format. Students can see some sample exercises and must prepare solution for all exercises in part B.

A. Sample exercises.

Exercise 1. Write a program to print "Hello World!" on the screen.

SOLUTION:

```
#include <iostream>
using namespace std;

int main(){
   cout << "Hello World! ";
   cout << endl;
return 0;
}
```

Exercise 2. Write and run a program that performs the following steps:

- Reading a length *a* from the keyboard.
- Calculating the area of a square with length a by using the formula: $S = a^2$.
- Displaying the area of square *S*.

SOLUTION:

```
#include <iostream>
using namespace std;

int main(){
   int a; // Input – Length
   int S; // Ouput – Area of Square

   cout << "Enter the length a here: ";
   cin >> a;

   S = a*a;

   cout << "The circumference: " << C << endl;
   return 0;
}
```

B. Exercises must to do.

Exercise 3. Read the following C++ program for understanding. Add some suitable declarations to complete the program and run it.

```
#<include<iostream>
using namespace std;
int main(){
...
    units = 5;
    price = 12.5;
    idnumber = 12583;
    cost = price*units;
    cout << idnumber << "  " << units << "  " << price << "  " << cost << endl;
    tax = cost*0.06;
    total = cost + tax;
    cout << tax << "  " << total << endl;
    return 0;
```

Exercise 4. Write a program that asks the user to type two integers A and B and exchange the value of A and B. The program should display the new value of A and B.

Exercise 5. Write and run a program that reads the name, age, sex, height and weight of a student and displays with proper heading for each variable.

Exercise 6. Write and run a program that performs the following steps:

- Assigning value to the radius *r*.
- Calculating the circumference using the formula: $C = 2\pi r$.
- Displaying the circumference.

Exercise 7. Write and run a program that performs the following steps:

- Assigning value to a Fahrenheit temperature *f*.
- Calculating the equivalent Celsius temperature *C* using the formula: C = (5.0/9)(f –32).

Displaying the Celsius temperature *C*.

Exercise 8. Write and run a program that reads the coordinate of 2 points, A and B, from the keyboard and then displays the distance between A and B.

Exercise 9. Given a function:

$$F(X) = a*X^2 + b*X + c$$

Write and run a program that performs the following steps:

- Reading the value of a, b and c from the keyboard.
- Solving F(X) = 0 (assume that the equation has two real distinct solutions X_1 and X_2).
- Displaying X_1 and X_2.

Exercise 10. Write and run a program that reads two integers through the keyboard and performs simple arithmetic operations (i.e., addition, subtraction, multiplication and division) and

displays the results.

Exercise 11. Write and run a program that reads an integer from the keyboard and displays whether the number is odd or not? You MUST NOT use IF statement.

Exercise 12. Write a program that asks the user to type 5 integers and writes the average of the 5 integers. This program uses only 2 variables.

Exercise 13. Write a program that converts the number of days into years, weeks and days.

Example: 1532 days = 4 years + 10 weeks + 2 days.

Student needs to assign value to number of days and display the result as example. Assume a year has 365 days.