

Tutorial 2 Simple programs and PASS

Programming Assignment aSesement System [PASS]

In this course, you will use the PASS system for program testing and assignment submission.

You may access PASS via the link in Blackboard, or via <https://pass3.cs.cityu.edu.hk:443>

(Note: use CITYMD\ prefix for the login name. e.g. CITYUMD\tmchan2)

(Note: PASS does not work in some browsers. E.g. Opera 12.14)

Click the link "Problem list".



Click the "Test/Submit" icon for the question you want to solve.



You may specify source code (.cpp file) upload with the "Browse" button (default), or you may paste the source code into the space provided. (Need to select from radio button)

To test the program (tutorial or assignment), click the **Test** button.



*Note: Your program should follow the input and output format **EXACTLY** (i.e. identical spacing, new lines and letter case) otherwise the PASS system will say that your program's output is incorrect.*

To submit assignment, click the **Submit** button. (Only available for assignments, it does not exist for tutorial questions). Please be reminded that only the submissions via the **Submit** button are counted. We do not consider the cpp code in **Test** as assignment submission.

Note: After submission, PASS will report the output of your program versus the "expected output". Note that the test data shown may not be the complete set. (For instance, in Assignment, some test cases are hidden)

Question 1b), 2a) and 2b) are available for testing in PASS.

1a) Download the program (**area.cpp**). The user inputs the width and height of a rectangle. The program computes and output the area of the rectangle. Compile and correct the syntax/logical errors.

Is the program easy to understand? Why?

b) Enhance the program so that the input and output of the program are as follows.

(Note: the underlined words are input by the user, you don't need to print it)

```
Please enter the width
3
Please enter the height
5
The area is 3*5=15
```

You should test the output of your program using PASS.

c) Improve the programming style of the program. This includes using

- (i) more meaningful variable name to reflect the purpose of the variable,
- (ii) indentation (use the tab character to indent and shift-tab to move back by 1 level),
- (iii) comments.

Let's try question 2a) and 2b) on your own after you learnt I/O manipulation (Lecture Notes #2 p48, p49) from class!

2a) Write a C++ program **bmi.cpp** to get the weight (*in kilograms*) and height (*in meters*) of a person. Then calculate and print the Body Mass Index (BMI) (to 2 decimal places) according to the formula:

$$\text{BMI} = \text{weight} / (\text{height} * \text{height});$$

The program should interact with the user as follows (the underlined words are the input from the user):

```
Enter your height in m: 1.8
Enter your weight in kg: 60
Your BMI is 18.52
```

Note: there should be a space after the colon ':'. Your program should follow the EXACT input/output format otherwise PASS will consider your program incorrect!

Remember to follow good programming style in your program.

Tips:

- Identify how many variables are required. We need a variable for BMI, weight and height.
- Consider the data type needed, is it **int**, or is it **double**? (see sample input above)
- Use **cin>>** to read the input for weight and height of the user.
- Compute the BMI and assign it to the variable for BMI.
- Use **cout<<** to print the BMI to the screen.
- To print to 2 decimal places, you may use **cout << fixed << setprecision(2)** for example, **cout << fixed << setprecision(2) << 123.4567;** gives 123.46
- Important: to use **setprecision()**, you need **#include <iomanip>**

2b) Modify the program in 2a), such that it accepts the user to input the weight in *pounds*. (not kg anymore!). We have the following conversion formula.

$$1 \text{ kg} = 2.21 \text{ pounds}$$

Name the file **bmi2.cpp**.

Example input and output:

```
Enter your height in m: 1.8
Enter your weight in pounds: 150
Your BMI is 20.95
```