

Sultan Qaboos University  
College of Science - Department of Computer Science  
COMP2101: Introduction to Computer Science - Spring 2010  
**Assignment 2**  
**The body mass index (BMI),**  
Due date: 27/03/2010, 23:55 pm (through Moodle)

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Name: ..... ID: ..... Section: .....

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**PROBLEM DESCRIPTION:**

The **body mass index (BMI)**, or **Quetelet index**, is a statistical measure which compares a person's weight and height<sup>1</sup>. It is used to estimate a healthy body weight based on a person's height. It is the most widely used diagnostic tool to identify weight problems within a population. It was invented between 1830 and 1850 by the Belgian polymath Adolphe Quetelet during the course of developing "social physics". Body mass index is defined as the individual's body weight divided by the square of his or her height. The formula universally used in medicine produces a unit of measure of kg/m<sup>2</sup>.

$$BMI = \frac{Weight}{(Height / 100)^2} \quad (1)$$

Write a complete C++ program that reads information related to two persons from an input file given by the user and calculates BMI rate using equation (1). The results should be stored in an output file named bmi.out.

**Input**

Each line in the input file contains the following: Person's Social security number (string), two integer numbers representing his/her weight and height in sequence, gender (a single character), first name and last name (a string of maximum size 25 characters).

```
U133S2000 160 80 M Ali Al-Shukeili
U135B2000 160 50 F Fatma Al-Harbi
```

**Figure 1:** A sample input file

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<sup>1</sup> <http://en.wikipedia.org/>

## Output

Your program should generate a report as shown below. The output should have a neat and readable format and saved in an output file named **bmi.out**.

REPORT						
Name		Gender	SS	Height	Weight	BMI
Ali	Al-Shukeili	M	U133S2000	160	80	31.25
Fatma	Al-Harbi	F	U135B2000	160	50	19.53

**Figure 2:** A sample output file

Your program should prompt the user to enter the input and output file names from the keyboard as shown in the following sample run.

```
Please enter the input file name: bmi.in
The report has been stored in the file: bmi.out
Press any key to continue...
```

**Figure 3:** A Sample run of the program

### DELIVERABLES:

- 1) Name your file containing your C++ source code: **hw2\_XXXXX.cpp**  
where your own student ID should replace the string "XXXXX". For example student with ID **38000** should submit a file called **hw2\_38000.cpp**.
- 2) Upload your assignment to Moodle before the due date 27/03/2010, 23:55 pm.

### GRADING TABLE:

Item	Points	Comments
Comments & variable naming	/ 2	
Variable declarations	/ 2	
Files (declaration, open, close)	/ 2	
Reading file name from keyboard	/ 2	
Reading from a file	/ 2	
Output file with the correct information	/ 4	
BMI Calculations	/ 4	
Program runs without syntax errors	/ 2	
Total	/ 20	