

# Sample Midterm Exam

CMPT-101

45 minutes

This is a closed book exam. Read each question carefully before answering it, and list any important assumptions you make. Answer all questions.

Name:

Student #:

Circle one:      CMPT-101

CMPT-104

<b>Question</b>	<b>Mark</b>
Q1	/4
Q2	/11
Q3	/5
Q4	/5
Q5	/15
Total	/40

**Question 1**

(4 marks) Write a C++ function named `abs_val` that returns the absolute value of an `int` passed to it by value. Do not use any special library functions.

## Question 2, Short answers

- a) (1 mark) Write a single `cout` statement that prints exactly the following on the screen (there are no leading or trailing spaces):

```
'\n' means newline
```

- b) (2 marks) Give examples of the two different kinds of C++ comments.

- c) (1 mark) What does the following code fragment print? Assume `math.h` has been included. Write your answer in the box.

```
const double rate = 0.07;  
cout << pow(rate,1);
```

- d) (1 mark) What does the following code fragment print? Write your answer in the box.

```
cout << (9+1)/int(double(2));
```

- e) (1 mark) What does the following code fragment print? Write your answer in the box.

```
cout << double(1/2);
```

f) (1 mark) What does the following code fragment print? Write your answer in the box.

```
cout << double(1)/2;
```

g) (1 mark) What does the following code fragment print? Write your answer in the box.

```
cout << 1/double(2);
```

h) (1 mark) What does the following code fragment print? Write your answer in the box.

```
cout << 1/2;
```

i) (1 mark) What is the difference between a *function* and a *function prototype*?

j) (1 mark) What is a *default constructor*?

**Question 3**

(5 marks) What does the following C++ program print to the screen? Write your answer in the box below.

```
#include <iostream.h>

void swap(int & a, int b)
{
    int temp = a;
    a = b;
    b = temp;
}

int main()
{
    int a = 4;
    int b = 2;
    int c = 5;

    swap(a,b);
    swap(b,c);

    cout << a << '\n' << b << '\n' << c;
}
```

**Question 4**

(5 marks) Suppose the following letter grade class has been defined globally in a program:

```
class Grade {
private:
    char grade;

public:
    Grade(char in_grade);
    void print();
};

Grade::Grade(char in_grade)
{
    grade = in_grade;
}

void Grade::print()
{
    cout << grade;
}
```

Write a main function that reads one character from the keyboard, creates a Grade object containing that character, and then have the object print itself. Assume `iostream.h` has been included.

**Question 5**

a) (10 marks) Below is the header for a C++ function; in this question, you will need to write just the body of this function. The function should ask the user to enter a single character, and you can assume the user will type in just 1 character. If they enter either `y`, `Y`, `n`, or `N`, then that character should be assigned to `ch`, and the function should end. If the user enters any other character, the function should keep asking the user to re-enter a valid character until they type either `y`, `Y`, `n`, or `N`.

```
#include <iostream.h>

void get_choice(char & ch)
```

- b) (5 marks) Write a second version of `get_choice` that uses the function return mechanism to return the value of `ch` (instead of a reference parameter). Note that you need only make a few minor modifications to the function in part a), assuming it is correct. Name this second function `get_choice2`, and give a 1-line example of how you would call it in a program.



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