

# UNBC

CPSC 100 Fall 2001

Midterm I—10 October 2000

Name(Printed) : \_\_\_\_\_

Signature : \_\_\_\_\_

Student Number : \_\_\_\_\_

ACRE	AREA	BALE	BAND	BARD	BASS
BETA	BIRD	BLOT	BOOK	BREW	CAMP
CHIP	CLAN	COAT	COIL	CORN	CROW
CURL	DARK	DEER	DOSE	DROP	DUCK
DUSK	FARE	FILM	FLAX	GAZE	GIFT
GOLD	GULF	HINT	HORN	HULL	IBOU
INCH	IRIS	ISLE	KERN	KILN	KITE
LANE	LARK	LENS	LOFT	LURE	MALT
MANX	MESH	MINK	MOTH	MOVE	MUSK
NAVY	NEWT	NOON	OATS	OBOE	OPAL
PARK	PINE	POET	RAFT	REED	RING
RUBY	RUFF	SEAM	SEED	SHOP	SILK
SINE	SNIP	SOAP	STUB	TASK	TAXI
TEAM	TELL	TEXT	TIDE	TILT	TOIL
TOME	TOUR	TURN	VANE	VISA	WALL
WICK	WOLF	WRIT	YARD		

Question	Score
1	/2
2	/2
3	/2
4	/1
5	/2
6	/4
7	/1
8	/2
9	/6
10	/6
11	/6
12	/3
13	/4
14	/4
15	/5
Total	/50

- Write the word circled above on each page of your exam. Do not put any other identifying marks on any page of your exam. Failure to put the circled word on a page of your exam may result in no marks being awarded for that page.
- *Read each question carefully. Ask yourself what the point of the question is. Check to make sure that you have answered the question asked.*
- This is a **50** minute exam. This exam contains **7** pages of questions not including this cover page. Make sure that you have all of them.
- Answer all questions on the exam sheet. If you do some of your work on the back of a page, clearly indicate to the marker what work corresponds with which question.
- Partial marks shall be awarded for clearly identified work.
- This exam counts as **20%** of your total grade. There are **50** points total on the exam.

## Multiple Choice

(2 each)

Circle the letter next to the *best* choice for each of the following questions.

1. The program line

```
#include "ragout.h"
```

causes

- (a) the pre-processor to replace the line above with the contents of your file `ragout.h`.
- (b) the pre-processor to replace the line above with the contents of the system file `ragout.h`.
- (c) the translator to translate the contents of the system file `ragout.h` into a `.o` file.
- (d) None of the above.

2. When you execute the command,

```
g++ -c file.cpp
```

you are using which parts of the compiler?

- (a) the pre-processor and the linker
- (b) the pre-processor and the translator
- (c) the translator and the linker
- (d) only the translator
- (e) None of the above.

3. When you execute the command,

```
g++ -o my_program *.o
```

you are using which parts of the compiler?

- (a) the pre-processor and the translator
- (b) the pre-processor only
- (c) the translator only
- (d) the linker only
- (e) None of the above.

## Arithmetic and Base Conversion

(1) 4. Convert 200 to base 8.

5. Express the following numbers in decimal notation.

(1) (a)  $64_{16}$

(1) (b)  $110010000_2$

(2) 6. (a) Convert  $0F3A_{16}$  to binary.

(2) (b) Convert the result to octal.

(1) 7. Write the sixteen-bit one's complement of the number  $03C6_{16}$ .

(2) 8. Suppose that your code contains

```
short int value19 = -5 ;
```

and that you know that `short int`'s take 16 bits on your computer. What bit pattern would be stored in `value19`?

1 each

9. Beside each C++ expression give its value:

- `17 % 8`
- `3+5*6/7`
- `3 / 5`
- `13 <= 2`
- `3.0 / 5`
- `10 | 9`

2 each

10. Beside each C++ code segment say what it prints and explain why:

- ```
int x = 3 ;
int y = 5 ;
cout << ((x--) * (++ y)) << endl ;
cout << x << endl ;
cout << y << endl ;
```

- ```
int x = 3 ;
int y = 5 ;
cout << ((--x) * (y++)) << endl ;
cout << x << endl ;
cout << y << endl ;
```

- ```
int x = 3 ;
int y = 5 ;
x /= 2 ;
y != 3 ;
cout << x << endl ;
cout << y << endl ;
```

**Syntax, ...**

- (3) 11. (a) What do we mean by the scope of a declaration? What is the scope of a variable declaration?
- (3) (b) What do we mean by the life-time of a variable? Is this a compile-time or run-time concept? What is the life-time of a variable declared inside a function?

- (3) **12.** Circle all of mistakes in the following program, and indicate what is wrong.

```
#include <iostream.h>
int main
{
    int x ;
    cout >> "Enter an integer:" ;
    cin << x << endl ;
    cout >> "You entered" >> x ;
    return ;
}
```

- (4) **13.** What are the rules for legal variable names in C++?

## Programming

- (4) **14.** Write a short program to enter an integer number, and then print out whether or not the number is evenly divisible by 7, 11, or 13. A sample output should look like:

```
Enter an integer number: 455
455 is evenly divisible by 7.
455 is not evenly divisible by 11.
455 is evenly divisible by 13.
```

- (5) **15.** Write a short program to enter an integer number, and then print out its cube. A sample output should look like:

```
Enter an integer number: 1001
The cube of 1001 is 1003003001.
```

Write a separate function to compute the cube. You may write your solution as one file, or three separate files.