

CPSC 100 Winter 2008
Midterm I—6 February 2008

Name(Printed) : _____

Signature : _____

StudentNumber :

BETA	KILN	POET	POET
BIRD	KITE	RAFT	RAFT
BLOT	MANX	REED	REED
BOOK	MESH	RING	RING
BREW	MINK	RUBY	RUBY
CAMP	MOTH	RUFF	RUFF
INCH	MOVE	SEAM	SEAM
IRIS	MUSK	SEED	SEED
ISLE	PARK	SHOP	SHOP
KERN	PINE	SILK	SILK

Question	Score
1	/2
2	/2
3	/2
4	/5
5	/4
6	/1
7	/3
8	/5

Question	Score
9	/2
10	/5
11	/5
12	/4
13	/5
Total	/45

- Write the word indicated above on each page of your exam in the box labelled “Identifier” on the following pages of the examination. Examination papers sometimes come unstapled. 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.
- Non-programmable calculators and simple wrist-watches are allowed. **No cell-phones or other non-medical electronic devices.**
- This exam counts as 20% of your total grade. There are 45 points total on the exam.

Multiple Choice

(2 each)

Circle the letter next to the *best* choice for each of the following questions. If you want, comment on your choice for partial part marks. (A correct answer without comments gets 2 points.)

1. The command line

```
javadoc HelloWorld.java
```

causes

- (a) the JAVA compiler to make a `HelloWorld.class` file from `HelloWorld.java`.
- (b) the JAVA runtime system to run the program.
- (c) the JAVA documentation system to create `.html-file(s)`.
- (d) *None of the above.*

2. The command line

```
javac file.java
```

causes

- (a) the JAVA compiler to make a `file.class` from `file.java`.
- (b) the JAVA compiler to make a `file.class` from `file.java` and then run it.
- (c) the JAVA documentation system to create `.html-file(s)`.
- (d) *None of the above.*

3. The command

```
java HelloWorld
```

causes

- (a) the JAVA compiler to compile `HelloWorld.java`.
- (b) the JAVA runtime system to run every method in `HelloWorld.class`.
- (c) the JAVA runtime system to run the main method in `HelloWorld.class`.
- (d) the JAVA documentation system to create `.html-file(s)`.
- (e) *None of the above.*

Short Answer

- (1) 4. (a) What support do JAVA chars and Strings supply for international programming?
- (2) (b) Why do computers use binary arithmetic?
- (2) (c) Can JAVA represent the number $1/7.0$ precisely in a double variable? Explain why or why not.

Arithmetic and Base Conversion

5. Express the following numbers in decimal notation.
- (2) (a) 1011_2

(2) (b) 110010000_2

(1) 6. Write the sixteen-bit one's complement of the number 1001001111000110_2 .

(3) 7. Suppose that your code contains

```
byte value = -6 ;
```

What bit pattern would be stored in value? (byte's take 8 bits in JAVA.)

(5) 8. Beside each JAVA expression give its value:

- | | | |
|---------------|-------------|-------------|
| • $17 \% 8$ | • $3+5*6/7$ | • $7 / 3$ |
| • $(-5) \% 8$ | • $3.0 / 5$ | • $10 \& 9$ |
| • $5 \% (-8)$ | • $"1"+"2"$ | |
| • $13 \leq 2$ | • $"1"+2$ | |

Syntax, ...

- (2) 9. Explain why we should use `.equals` to compare two Strings rather than using `==`.
10. Consider the code shown in Figure 1 on the following page.
- (1) (a) What does the "String" between "static" and "double_double" mean?
- (1) (b) What kind of arguments does this method take?
- (1) (c) What would go wrong if we tried to shorten the method name to `double`?
- (2) (d) What would `"System.out.println(double_double(3+2)) ;"` print?

```
public static String double_double(int aNumber)
{
    String equation ;
    equation = (aNumber*2) + " = "
              + aNumber + "+" + aNumber ;
    return equation ;
}
```

Figure 1: JAVA code for Question 10.

(5) **11.** Circle the names below that *are not* legal JAVA variables, and write beside each that isn't why not.

- cafeLatteIsAVirtue
- public
- Nabob Coffee
- main
- capuccino
- 2java
- java2
- "Java"

Programming

- (4) 12. Write a short program to enter a name and an age, and then print out a birthday greeting of the form

GREETING	AGE CONDITION
HAPPY BIRTHDAY, <i>Lisa</i> !	less than 11,
Happy 40th Birthday, <i>Lisa</i> !	divisible by 10 (but not 10),
Happy Birthday, <i>Lisa</i> !	something else.

If you cannot remember how to do something precisely, write a comment explaining what you are trying to do.

- (5) 13. Write a short program that asks for a weight in pounds, and then prints out the corresponding value in kilograms. A sample output should look like:

```
Enter a weight in pounds: 101
The weight 101.0 lbs is 45.08928571428571 kgs.
```

The conversion factor is 2.24 lbs/kg.

If possible, write multiple methods in your program. If possible, write the conversion factor as a named constant. If you are unsure what to put in particular part, add a comment to that effect. Attempt to make the overall structure of your code clear.