

Please fill in your Student Number and, optionally, Name.

Student Number : _____

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University of Cape Town ~ Department of Computer Science

Computer Science 1015F ~ 2007

Supplementary Theory Test 1A

Marks : 30

Time : 40 minutes

Instructions:

- a) Answer all questions.
- b) Write your answers in the space provided.
- c) Show all calculations where applicable.

Question 1: Introduction to Computing [10]

a) Name two non-electrical historical computing devices and describe what each was used for. [4]

b) In a modern electrical computer, what is the purpose of the Operating System? [1]

c) What is the difference between an algorithm and a program? [2]

d) In your own words, describe an algorithm for making a telephone call using a fixed line (i.e., not a cellphone). List at most 6 steps. [3]

Question 2: Multiple Choice. [10]

For each question, write down just the letter of the correct answer.

a) A “.class” file is written in:

[1]

- A. byte-code
- B. machine language
- C. Java
- D. source code

Answer: _____

b) The Java interpreter:

[1]

- A. Translates object code to source code.
- B. Is a low-level language
- C. Translates byte-code into machine language.
- D. B and C

Answer: _____

c) Examine the following Java expression:

[1]

```
System.out.println("Hello world!");
```

The *method* in this expression is:

- A. “Hello world”
- B. System.out
- C. println
- D. ;

Answer: _____

- d) Which of the following Java expressions shows an example of *initializing a variable*? [1]
- A. `String str1;`
 - B. `str1="New York";`
 - C. `int count = str1.length();`
 - D. `System.out.println(str1+str1+count);`

Answer: _____

- e) Which of the following Java expressions shows an example of *concatenation*? [1]
- A. `String str1;`
 - B. `str1="New York";`
 - C. `int count = str1.length();`
 - D. `System.out.println(str1+str1+count);`

Answer: _____

- f) Which of the following Java expressions shows an example of a *primitive type*? [1]
- A. `String str1;`
 - B. `str1="New York";`
 - C. `int count = str1.length();`
 - D. `System.out.println(str1+str1+count);`

Answer: _____

- g) Examine the following Java expression:

`double mystery = 3/2 + 5/2.0;`

What will be the value of `mystery` after executing this expression? [1]

- A. 3.5
- B. 3.0
- C. 4.0
- D. none of the above

Answer: _____

- h) Which of the following operators has the *highest precedence*? [1]
- A. --
 - B. *
 - C. ++
 - D. A and C

Answer: _____

- i) Which of the following expressions shows an example of a syntax error? [1]
- A. `Int j = 15;`
 - B. `int i = 5.5;`
 - C. A and B
 - D. none of the above

Answer: _____

- j) Examine the following Java expression:

```
int mystery = (int)2.5 * 5 % 2;
```

What will be the value of `mystery` after executing this expression? [1]

- A. 2.5
- B. 2
- C. 0
- D. none of the above

Answer: _____

- k) Which of the following people designed a “Difference Engine”? [1]
- A. Charles Babbage
 - B. Alan Turing
 - C. Grace Hopper
 - D. Howard Aiken

Answer: _____

Question 3: Java Basics [5]

a) What is *Unicode*? [2]

b) Explain briefly the difference between syntax errors, runtime errors and logic errors. [3]

Question 4: Strings [5]

For each question below, write down just the output produced by the listed lines of program code.

- a) `String greeting = "Mr";`
`String testStr = "Toad";`
`System.out.print(greeting.length());`
`System.out.println(testStr.length());` [2]

- b) `String greeting = "Mr";`
`String testStr = "Toad";`
`int count = 0;`
`System.out.println(count);`
`count=greeting.length();`
`System.out.println(count);`
`System.out.println(testStr.charAt(count));` [3]
