

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

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

**Name** : \_\_\_\_\_

**For Official Use**

**Mark** : \_\_\_\_\_

**Marker** : \_\_\_\_\_

**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]

---

---

---

---

---