



FINAL
Examination Paper

(COVER PAGE)

Session : August 2017

Programme : Diploma in Electrical and Electronic Engineering (DEEI)

Course : CSC2181: Object-Oriented Programming in Java

Date of Examination : 13 December 2017 (Wednesday)

Time : 2:00pm – 4:00pm Reading Time : Nil

Duration : 2 hours

Special Instructions :

This paper consists of SIX (6) questions. Answer any FOUR (4) questions in the answer booklet provided. All questions carry equal marks.

Materials permitted :

Non-Programmable Scientific Calculator

Materials provided :

Nil

Examiner(s) :

Neesha A/P Jothi

Moderator :

Dr. Vincent Khoo Kay Teong

This paper consists of 5 printed pages, including the cover page.

INTI INTERNATIONAL COLLEGE PENANG

DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING PROGRAMME (DEEI)
CSC2181: OBJECT-ORIENTED PROGRAMMING IN JAVA
FINAL EXAMINATION: AUGUST 2017 SESSION

Instructions: This paper consists of **SIX (6)** questions. Answer any **FOUR (4)** questions in the answer booklet provided. All questions carry equal marks.

Question 1

- (a) What are the input and output of a Java compiler? (4 marks)
- (b) Explain Java keywords. List (3) THREE Java keywords. (5 marks)
- (c) Is Java case sensitive? What is the case for Java keywords? (4 marks)
- (d) Explain the (3) THREE types of errors in programming. (6 marks)
- (e) Complete the following:
 - (i) If you forget to put a closing quotation mark on a string, what kind of error will be raised?
 - (ii) If your program needs to read integers, but the user entered strings, an error would occur when running this program. What kind of error is this?
 - (iii) Suppose you write a program for computing the perimeter of a rectangle and you mistakenly write your program so that it computes the area of a rectangle. What kind of error is this? (6 marks)

Question 2

- (a) Translate the following algorithm into Java code:
 - (i) Declare a double variable named miles with initial value 100.
 - (ii) Declare a double constant named KILOMETERS_PER_MILE with value 1.609.
 - (iii) Declare a double variable named kilometers, multiply miles and KILOMETERS_PER_MILE, and assign the result to kilometers.
 - (iv) Display kilometers to the console.
 - (v) What is the value of kilometers after step (iv)? (5 marks)

(b) Show the results of the following remainders:

- (i) $56 \% 6$
- (ii) $78 \% -4$
- (iii) $-34 \% 5$
- (iv) $-34 \% -5$
- (v) $5 \% 1$
- (vi) $1 \% 5$

(6 marks)

(c) How do you obtain the current second, minute, and hour?

(6 marks)

(d) Derive the output of the following statements:

- (i) `System.out.println(2 * (5 / 2 + 5 / 2));`
- (ii) `System.out.println(2 * 5 / 2 + 2 * 5 / 2);`
- (iii) `System.out.println(2 * (5 / 2));`
- (iv) `System.out.println(2 * 5 / 2);`
- (v) `System.out.println("3.0 * 2 / 4 is " + 3.0 * 2 / 4);`
- (vi) Write a statement to display the result of $2^{3.5}$.

(8 marks)

Question 3

(a) Write a program that randomly generates an integer between 1 and 12 and displays the English month name, eg December 12, February 2 etc. (10 marks)

(b) Write a program that prompts the user to enter a weight in pounds and height in inches and display the BMI. (15 marks)

BMI	Interpretation
Below 16	Seriously overweight
16 – 18	Underweight
18 – 24	Normal weight
24 – 29	Seriously overweight
Above 35	Gravely overweight

Note that one pound is 0.4535 kilograms and one inch is 0.0254 meters.

Question 4

- (a) Write a program that creates three methods. The first finds the maximum integer, the second finds the maximum double and the third finds the maximum among three double values. All three methods are named max. (15 marks)
- (b) Write a program that creates two methods: 1) reverse and 2) isPalindrome. The first method will reverse the numbers entered, the second method will check if the reversed numbers are palindrome. (10 marks)

Question 5

Write a sort method that uses the bubble sort algorithm. The bubble sort algorithm makes several passes through an array. On each pass, successive neighboring pairs are compared. If a pair is not in order, its values are swapped; otherwise, the values remain unchanged. The technique is called a bubble sort or sinking sort because the smaller values gradually “bubble” their way to the top and the larger values “sink” to the bottom. Write a test program that reads in one double numbers, invokes the method and displays the sorted numbers.

(25 marks)

Question 6

A school has 100 lockers and 100 students. All lockers are closed on the first day of school. As the students enter, the first student, denoted S1, opens every locker. Then the second student, S2, begins with the second locker, denoted L2, and closes every other locker. Student S3 begins with the third locker and changes every third locker (closes it if it was open, and opens it if it was closed). Student S4 begins with locker L4 and changes every fourth locker. Student S5 starts with L5 and changes every fifth locker, and so on, until student S100 changes L100. After all the students have passed through the building and changed the lockers, which lockers are open? Write a program to find your answer.

Hint: Use an array of **100 boolean** elements, each of which indicates whether a locker is open (**true**) or closed (**false**). Initially, all lockers are closed.

(25 marks)

~ The End ~

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