Workshop 1

Type: workshop

Code: Pro192

Slot(s):

I. Knowledge required:

Basic Java language: variable, operators, data type, function,array and input and Output (Standard I/O).

II. Learning Outcome:

- ✓ Install and use JDK and Netbean IDE to develop Java applications
- ✓ Proficient in the use of basic Java components
- ✓ Applying data types to declare and use variables and constants in java
- ✓ Proficient use of control structures to write statements and functions in java
- ✓ Write a function, call a function, and pass arguments in Java.
- ✓ Create, run and test a simple program in java

III. Content

Lesson 1: Write a program to solve quadratic equations in which the coefficients a, b and c are entered from the keyboard.

Lesson 2: Write a program to input monthly electricity usage and calculate electricity bill by progressive method

- ❖ If the number of electricity used is from 0 to 50, the price for each number is 1000
- ❖ If the amount of electricity used is over 50, the price for each excess number of electricity is 1200

INSTRUCT

- ❖ If the amount of electricity used < 50: money = soDien*1000
- ❖ Opposite: money = 50*1000 + (soDien - 50)*1200

Lesson 3: Write a program to organize a menu consisting of 2 functions that call the above 2 function of lesson1,2 and a function that exits the application.

Lesson 4: Write a functional program to input 2 arrays of students' names and grades according to the following requirements:

a. Initialize 2 arrays where n is the number of students entered from the keyboard.

b. Randomly initialize Student's scores with different values between 1 and 10

c. Export 2 imported arrays, each student has more academic ability

- ❖ Weak: score < 5
- ❖ Average: 5 <= score < 6.5
- ❖ Good: 6.5 <= score < 7.5
- ❖ Excellent: 7.5<= score < 9
- ❖ Excellent: score >= 9

d. Sort the list of entered students in descending order by grade

e. Print out the information of the Student with the highest score.

f. Calculate the average score of the students

g. Write a function that normalizes names for students with the first letter in uppercase.

For example: name: "Nguyen van a". Name after standardization: Nguyen Van A

INSTRUCT

- ✓ Math.random(): function returns a random double value betwwen 0 and 10
- ✓ Use the if statement to evaluate the academic performance and then output each student's information
  - Full name:
  - Score:
  - Academic ability:
- ✓ In this lesson, you can't use Arrays.sort() to sort it, but you have to use a custom algorithm.
- ✓ To canonicalize the first name, convert all characters in the name to lowercase using the toLowerCase() method. Then split the name into separate words using the split() method with commas. how to make delimiters. Next, we canonicalize each word in the name by converting the first character of the word to uppercase using the substring() and toUpperCase() methods. Then we reassemble the words into normalized names using the join() method.

IV. Rubric

Criteria	Score
Lesson 1:	1
Lesson 2:	1
Lesson 3:	1
Lesson4	7
a. Function to enter name and correct syntax	1
b. Correct calculation function of academic ability	1
c. The function outputs the array exactly	1
d. The sort function prints the array descending	1
e. The function prints the Student with the highest score	1
f. Name normalization function	1
g. The main() function calls the child functions according to the correct syntax and runs exactly	1
Total point	**10**