LAB EXERCISE 4

TOPIC: ARRAY

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SECTION: 02

1. Define the following arrays

   a) `heights`, 15 elements of type float.

      answer: float heights [15];
   b) `ages`, 9 elements of type integer.
      answer: int ages [9];
   c) `metrics`, 10 elements of type string.
      answer: string metrics [10];

2. Given the definition of the array. Give reason why definition is not correct.

   a) `float points[6.5];`

      `answer: number of elements can be in integer form only`
   b) `int sizeLimit;`
      `answer : there is no number of elements declare`

   c) `int address[sizeLimit];`
      `answer: number of elements can only in integer number only and there is no number of elements declare`

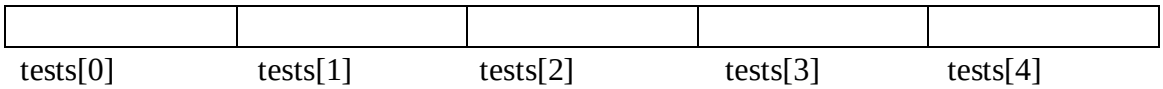
   d) `char category[-8];`
      `answer: number of elements can be in positive integer number only`

   e) `double length[];`
      `answer: there is no number of elements`

3. Write C++ statements to perform each of the following:

   a) Declare an array named `tests` to allocate 5 elements of type double.

      answer: double tests[5];
   b) Show the memory allocations of the array named `tests`.
      answer:



   c) Read the value 25 from the keyboard and assign it into the array named `tests` of index 3.
      answer: tests[3] = 25;

d) Show the memory allocations of the array named `tests`.
answer:

tests[0]	tests[1]	tests[2]	tests[3]	tests[4]

e) Add the content of index 3 with the value 20 and assign the result into `tests [4]`.
answer: tests[4] = tests[3] + 20;

f) Show the memory allocations of the array named `tests` after question (e).
answer:

			20	45
tests[0]	tests[1]	tests[2]	tests[3]	tests[4]

4. Given the following programs. Show the memory layout of the array and explain each statement.

```
1  //Program 5.1
2  #include <iostream>
3  using namespace std;
4
5  int main() {
6     const int SIZE = 4;
7     double score[SIZE];
8     int i;
9
10    cout << "Enter " << SIZE <<" of doubles: ";
11    for (i = 0; i < SIZE; i++)
12       cin >> score[i];
13    cout << "The scores are: \n";
14    for (i = 0; i < SIZE; i++)
15       cout <<score[i] << endl;
16    return 0;
17 }
```

score[0]	score[1]	score[2]	score[3]

LINE	COMMENT
6	There 4 number of elements has been declared
7	Data type double with array name score has been declared
8	Declared i to do looping
10	Display how many elements of score
11	Looping to read score
12	Read every number of elements of score
13	Display score for each elements
14	Looping to display score
15	Display every score

5. Identify which of the following array declaration are invalid. If a declaration is invalid, explain your answer.

a) `int digits[8] = {2,4,5,3,5,1,8,0};`
b) `int ids[5] = {101,202,303,404,505,606,707};`
c) `float length[] = {30.2,4.99,5.9};`
d) `int size[8] = {67, ,66, , , 99,39,67};`
e) `char feel[] = {'c', 'í', 'n', 't', 'a', '\0'};`
f) `char name[5] = "Azira";`
g) `char name[20] = "Sharifah Aini";`

answer:
a) valid
b) invalid as number of elements exceed from original declaration
c) valid
d) invalid as elements number 1,3,5 is left the space between other number of elements

e) `valid`
f) `valid`
g) `valid`

6. Write a C++ program based on the following information, by using array (submit this question in .cpp file):

- Number of students = 10
- There are 10 marks of students to be saved

Student 1: 70
Student 2: 85
Student 3: 57
Student 4: 64
Student 5: 83
Student 6: 92
Student 7: 75
Student 8: 69
Student 9: 95
Student 10: 72

Based on the above information, calculate the total of marks for all students, and then calculate its average.