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MATRIC NUMBER: A20MJ4005

SECTION: 15

SECJ 1013 PROGRAMMING TECHNIQUE 1

LAB EXERCISE 3 (4%)

1. Define the following arrays

a) `weights`, 20 elements of type float

Answer:

```
const int w = 5;
```

```
float weights [w];
```

b) `ages`, 7 elements of type integer.

Answer:

```
const int a=7;
```

```
int ages [a];
```

c) `metrics`, 10 elements of type string.

Answer:

```
const int m=11;
```

```
string metrics[m];
```

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

a) `float points[6.5];`

Answer:

The definition not correct because the size of an array cannot be a float, must be an integer.

b) `int sizeLimit;`

```
int address[sizeLimit];
```

Answer:

The definition not correct because the variable `sizeLimit` has not been assigned a value. That represents the size of the array must be have specified value.

c) `char category[-7];`

Answer:

The definition not correct because, the size if array is negative number, must be positive integer number

d) `double length[];`

Answer:

The definition not correct because, the size of array has not been declared.

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

a) Declare an array named `marks` to allocate 6 elements of type `double`.

Answer:

```
const int m=6;
double marks[m];
```

b) Show the memory allocations of the array named `marks`.

Answer:

marks [0]	marks[1]	marks[2]	marks[3]	marks[4]	marks[5]
0	0	0	0	0	0

c) Read the value 15 from the keyboard and assign it into the array named `marks` of index 4.

Answer:

```
marks[4]=15;
```

d) Show the memory allocations of the array named `marks`.

Answer:

marks [0]	marks[1]	marks[2]	marks[3]	marks[4]	marks[5]
0	0	0	0	15	0

e) Add the content of index 4 (i.e. `marks [ 4 ]`) with the value 10 and assign the result into `marks [ 5 ]`.

Answer:

```
int x= marks[4]+10;
marks[4]=x;
```

f) Show the memory allocations of the array named `marks`.

Answer:

marks [0]	marks[1]	marks[2]	marks[3]	marks[4]	marks[5]
0	0	0	0	15	25

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

a.

```

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 }

```

Answer:

```
# include<iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    const int SIZE=4;
```

```
    double score [SIZE];
```

```
    score[SIZE]
```

--	--	--	--

```
int i ;
```

```
    cout<<"Enter "<<SIZE<<"of doubles :";
```

```
    for(i=0;i<SIZE;i++)
```

```
        cin>>score[i];
```

```
        score[0]
```

5.0			
-----	--	--	--

```
        Score[0]
```

```
        score[1]
```

5.0	10.5		
-----	------	--	--

```
        Score[0]
```

```
        score[1]
```

```
        score[2]
```

5.0	10.5	15.5	
-----	------	------	--

```
        Score[0]
```

```
        score[1]
```

```
        score[2]
```

```
        score[3]
```

5.0	10.5	15.5	20.5
-----	------	------	------

```
    Cout<<"The score are :\n";
```

```
    for(i=0;i<SIZE ;i++)
```

```
        cout <<score[i];
```

```
        Score[0]
```

```
        score[1]
```

```
        score[2]
```

```
        score[3]
```

5.0	10.5	15.5	20.5
-----	------	------	------

```
    return 0 ;
```

```
}
```

b.

```
1 //Program 5.2
2 #include <iostream>
3 using namespace std;
4 #define SIZE 4
5
6 int main() {
7     float score[SIZE];
8     int i;
9
10    cout << "Enter " << SIZE << " of doubles: ";
11    for (i = 0; i < SIZE; i = i + 1)
12        cin >> score[i];
13    cout<<"The scores in reverse order are: \n";
14    for (i = SIZE - 1; i >= 0; i = i - 1)
15    { cout << score[i];
16      cout << endl; }
17    return 0;
18 }
```

Answer:

```
# include<iostream>
using namespace std;
#define SIZE =4;
int main() {
```

```
    float score [SIZE];
```

--	--	--	--

```
    int i ;
```

```
    cout<<"Enter "<<SIZE<<"of doubles :";
```

```
    for(i=0;i<SIZE;i++)
```

```
    cin>>score[i];
```

score[0]			
5.0			

Score[0]	score[1]		
5.0	10.5		

Score[0]	score[1]	score[2]	
5.0	10.5	15.5	

Score[0]	score[1]	score[2]	score[3]
5.0	10.5	15.5	20.5

```
Cout<<"The score in reverse order are : \n;
```

```
for(i=SIZE-1;i<=0;i--)
```

```
{
```

```
cout <<score[i];
```

```
cout<< endl;
```

```
}
```

Score[0]	20.5
score[1]	15.5
score[2]	10.5
score[3]	5.0

```
return 0 ;
```

```
}
```

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};`

Answer: Valid

b) `int ids[5] = {101,202,303,404,505,606,707};`

Answer: declaration is invalid, because the elements are more than the size of array

c) `float length[] = {30.2,4.99,5.9};`

Answer: valid

d) `int size[8] = {67, ,66, , , 99,39,67};`

Answer: declaration is invalid, because no elements are inserted between parentheses.

e) `char feel[] = {'c', 'i', 'n', 't', 'a', '\0'};`

Answer: valid

f) `char name[5] = "Azira"`

Answer: declaration is invalid because the type of array must have ";"

g) `char name[20] = "Sharifah Aini"`

Answer: declaration is invalid because the type of array must have ";"

6. Write a C++ program based on the following information (you can screenshot your full program and your answer in this part):

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

Student 1: 80

Student 2: 90

Student 3: 55

Student 4: 60

Student 5: 88

Student 6: 91

Student 7: 73

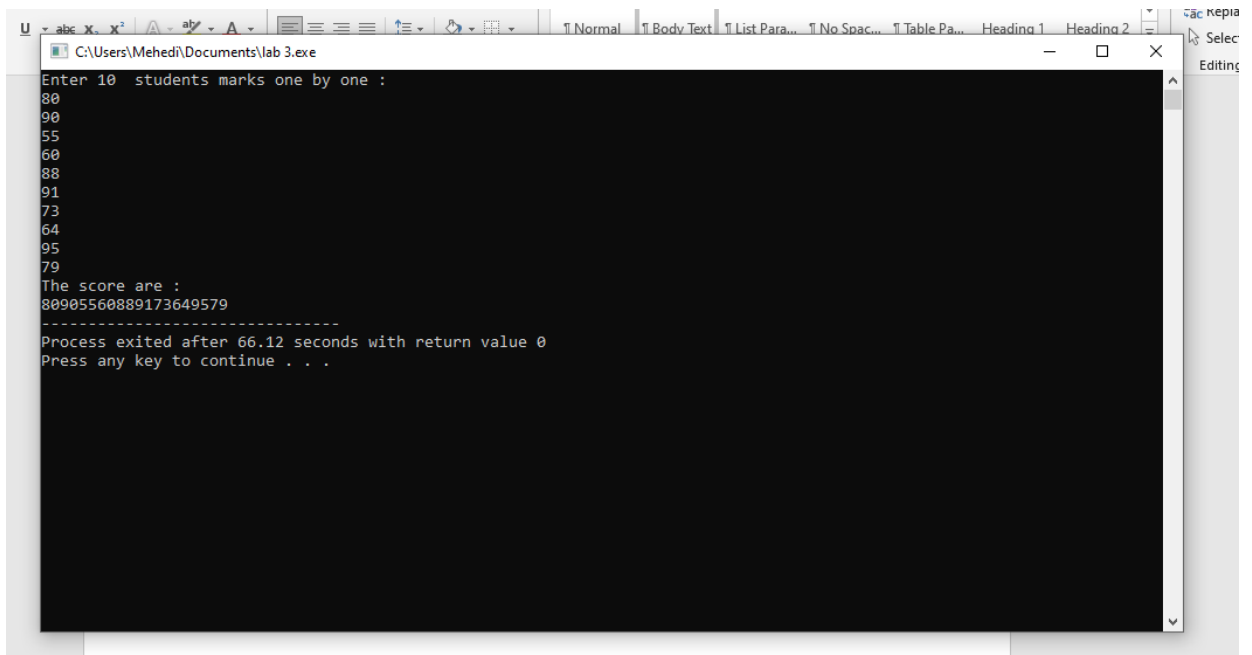
Student 8: 64

Student 9: 95

Student 10: 79

Based on the above information, calculate the total of marks for all students, and then calculate its average. (Tips: use looping for extra marks)

Answer:



```
C:\Users\Mehedi\Documents\lab 3.exe
Enter 10 students marks one by one :
80
90
55
60
88
91
73
64
95
79
The score are :
80905560889173649579
-----
Process exited after 66.12 seconds with return value 0
Press any key to continue . . .
```

```
#include<iostream>
using namespace std;
int main()
{
    const int SIZE=10;
    double score [SIZE];
    int i ;
    cout<<"Enter "<<SIZE<<" students marks one by one :"<<endl;
    for(i=0;i<SIZE;i++)
        cin>>score[i];
    cout<<"The score are :\n";
    for(i=0;i<SIZE ;i++)
        cout <<score[i];
    return 0 ;
}
```