

1.1P: Preparing for OOP – Answer Sheet

1. Explain the following terminal instructions:

- a. `cd`: `cd` command / instruction is used to change, navigate or target a certain root directory in the terminal program.

```
storm@Uzi MINGW64 ~  
$ cd /c/users/storm/desktop/oop/programming/splashkitdemo  
  
storm@Uzi MINGW64 /c/users/storm/desktop/oop/programming/splashkitdemo  
$ |
```

- b. `ls`: `ls` command is used to show a list of files in the current directory.

```
storm@Uzi MINGW64 /c/users/storm/desktop/oop/programming/splashkitdemo  
$ ls  
Program.cs  lib  obj  splashkitdemo.csproj
```

- c. `pwd`: the `pwd` command which means print work directory is used to display which directory you are currently in.

```
storm@Uzi MINGW64 /c/users/storm/desktop/oop/programming/splashkitdemo  
$ pwd  
/c/users/storm/desktop/oop/programming/splashkitdemo
```

2. Consider the following kinds of information, and suggest the most appropriate data type to store or represent each:

Information	Suggested Data Type
A person's name	String
A person's age in years	Integer
A phone number	varchar
A temperature in Celsius	Decimal
The average age of a group of people	float
Whether a person has eaten lunch	boolean

3. Aside from the examples already given, come up with an example of information that could be stored as:

Data type	Suggested Information
-----------	-----------------------

String	Name
Integer	Number of Students
Float	Number of Kilometers
Boolean	Yes or No Question

4. Fill out the following table, evaluating the value of each expression and identifying the data type the value is most likely to be:

Expression	Given	Value	Data Type
5		5	Integer
True		true	Boolean
a	a = 2.5	2.5	Float
1 + 2 * 3		6	Integer
a and False	a = True	false	Boolean
a or False	a = True	true	Boolean
a + b	a = 1 b = 2	3	Integer
2 * a	a = 3	6	Integer
a * 2 + b	a = 1.5 b = 2	5.0	float
a + 2 * b	a = 1.5 b = 2	5.5	float
(a + b) * c	a = 1 b = 1 c = 5	10	integer
"Fred" + "Smith"		Fred Smith	string
a + "Smith"	a = "Wilma"	Wilma Smith	string

5. Explain the difference between **declaring** and **initialising** a variable.

The difference between the two is for declaring lets the compiler about any pre-existing variables/entities while initializing is assigning a value to a variable.

6. Explain the term **parameter**. Write some code that demonstrates a simple of use of a parameter.

A parameter is a variable that is used within a function to be called.

```
public Message(string txt)
{
    text = txt;
}
```

7. Using an example, describe the term **scope**.

Scope is a concept that refers to where values and functions can be accessed. For example, inside a function we declare a variable like string my name. that variable can be referred only inside that function and called a local scope. However, with a global scope, a variable can be called outside a function.

8. In any procedural language you like, write a function called Average, which accepts an array of integers and returns the average of those integers.

```
1  #include <iostream>
2  using namespace std;
3
4  double Avg(int num[], int n)
5  {
6      int avg = 0;
7
8      for(int i=0;i<n;i++)
9          avg += num[i];
10
11     return (double)avg/n;
12 }
13
```

9. In the same language, write the code you would need to call that function and print out the result.

```
main.cpp
1  #include <iostream>
2  using namespace std;
3
4  double Avg(int num[], int n)
5  {
6      int avg = 0;
7
8      for(int i=0;i<n;i++)
9          avg += num[i];
10
11     return (double)avg/n;
12 }
13
14 int main()
15 {
16     int array[] = {10,15,20,25,30,35,40,45,50};
17     int n = sizeof(array)/sizeof(array[0]);
18
19     cout << Avg(array , n) << endl;
20     return 0;
21 }
```

30

...Program finished with exit code 0
Press ENTER to exit console.

10. To the code from 9, add code to print the message "Double digits" if the average is above 10. Otherwise, print the message "Single digits".

main.cpp

```
1  #include <iostream>
2  using namespace std;
3
4  double Avg(int num[], int n)
5  {
6      int avg = 0;
7
8      for(int i=0;i<n;i++)
9          avg += num[i];
10
11     return (double)avg/n;
12 }
13
14 int main()
15 {
16     int array[] = {20,1,3,4,14,5,6,2,10};
17     int n = sizeof(array)/sizeof(array[0]);
18
19     cout << Avg(array , n) << endl;
20
21     if(n>10)
22     {
23         printf("Double Digit");
24     }
25     if(n <= 9)
26     {
27         printf("Single Digit");
28     }
29
30     return 0;
31 }
```

main.cpp

```
1 #include <iostream>
2 using namespace std;
3
4 double Avg(int num[], int n)
5 {
6     int avg = 0;
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8     for(int i=0;i<n;i++)
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11     return (double)avg/n;
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14 int main()
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16     int array[] = {20,1,3,4,14,5,6,2,10};
17     int n = sizeof(array)/sizeof(array[0]);
18
19     cout << Avg(array , n) << endl;
20
21     if(n>10)
22     {
23         printf("Double Digit");
24     }
25     if(n <= 9)
26     {
27         printf("Single Digit");
28     }
29
30     return 0;
31 }
```

input

7.22222

Single Digit