Swinburne University of Technology

COS20007 Object Oriented Programming

1.1P: Preparing for Object Oriented Programming

PDF generated at 13:03 on Tuesday 7th March, 2023

Produced by OOP Submission Formatter

1.1P: Preparing for OOP – Answer Sheet

1. Explain the following terminal instructions:
    a. cd: cd stands for change directory which is used when you're working in a terminal
    b. ls: ls lists the files and directories in the current directory
    c. pwd: pwd stands for print working directory which is used to print the path or the working directory

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	String
A temperature in Celsius	Float
The average age of a group of people	Integer
Whether a person has eaten lunch	Boolean

3. Aside from the examples already provided in question 2, come up with an example of information that could be stored as:

Data type	**Suggested Information**
String	Car Brands
Integer	Number of cars
Float	Length of the car
Boolean	Is Porsche designed in Italy?

4. Fill out the last two columns of 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**

6		6	Integer
True		True	Boolean
a	a = 2.5	2.5	Float
1 + 2 * 3		7	Integer
a and False	a = True	True	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 = 2.5
	b = 2
		7	Integer

a + 2 * b	a = 2.5
	b = 2
		6.5	Float

(a + b) * c	a = 1
	b = 1
	c = 5
		10	Integer

“Fred” + “ Smith”		Fred Smith	String
a + “ Smith”	a = “Wilma”	Wilma Smith	String

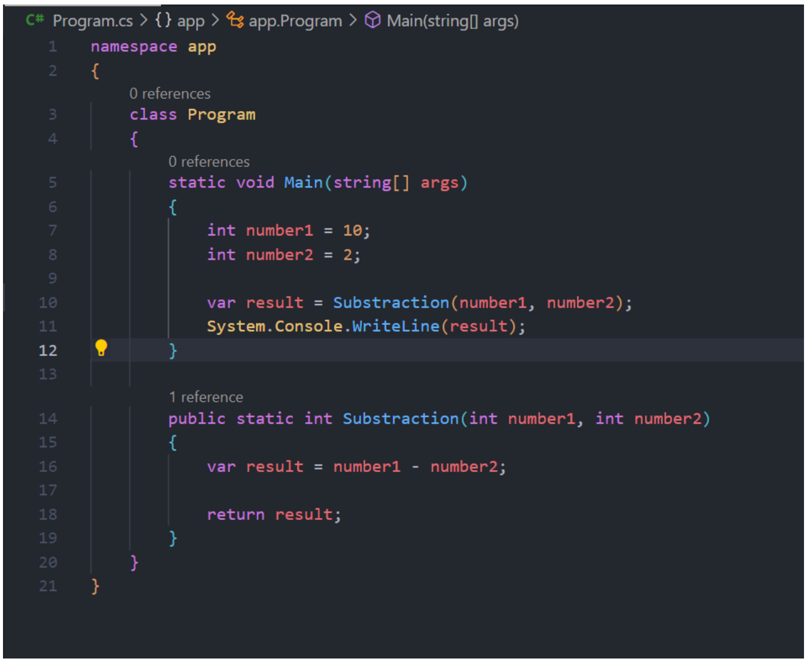
5. Using an example, explain the difference between **declaring** and **initialising** a variable.

The difference between the two is declaration is when you declare a variable with a name, and a variable can be declared only once. Initialising is when we put a value in a variable.

Example:
Int x *(Declaration)*
Int x = 7 *(Initialisation)*

6. Explain the term **parameter**. Write some code that demonstrates a simple of use of a parameter. You should show a procedure or function that uses a parameter, and how you would call that procedure or function.

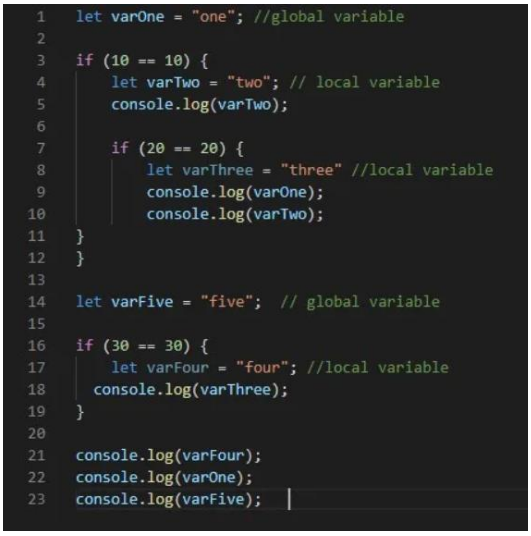
A parameter is a special kind of variable used in a function to refer to one of the pieces of data provided as input to the function.



```
namespace app
{
    0 references
    class Program
    {
        0 references
        static void Main(string[] args)
        {
            int number1 = 10;
            int number2 = 2;

            var result = Substraction(number1, number2);
            System.Console.WriteLine(result);
        }

        1 reference
        public static int Substraction(int number1, int number2)
        {
            var result = number1 - number2;

            return result;
        }
    }
}
```

7. Using an example, describe the term **scope** as it is used in procedural programming (not in business or project management). Make sure you explain the different kinds of scope.

Scope is the area of the program where an item (be it variable, constant, function, etc.) that has an identifier name is recognized.



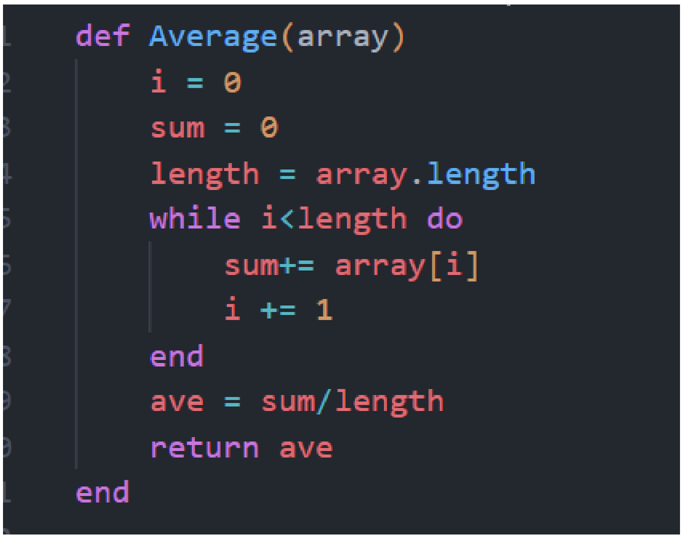
```
1   let varOne = "one"; //global variable
2
3   if (10 == 10) {
4       let varTwo = "two"; // local variable
5       console.log(varTwo);
6
7       if (20 == 20) {
8           let varThree = "three" //local variable
9           console.log(varOne);
10          console.log(varTwo);
11  }
12  }
13
14  let varFive = "five";  // global variable
15
16  if (30 == 30) {
17      let varFour = "four"; //local variable
18    console.log(varThree);
19  }
20
21  console.log(varFour);
22  console.log(varOne);
23  console.log(varFive);
```

The console.log(varThree) at line 18 will throw a ReferenceError: varThree is not defined because it cannot be accessed except where it was defined.

The console.log(varFour) at line 21 will also throw ReferenceError: varFour is not defined because varFour is a local variable and it is not accessible outside its scope.

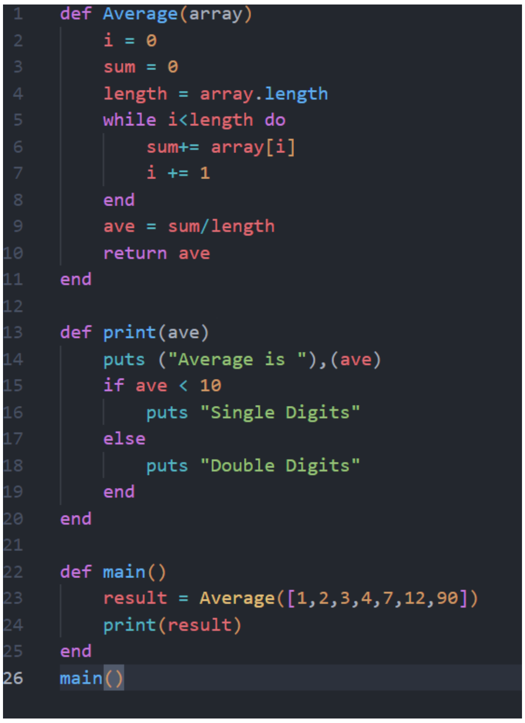
While the console.log(varOne) at line 22 and console.log(varFive) at line 23 print one and five respectively because both varOne and varFive are global variables.

8. In a procedural style, in any language you like, write a function called Average, which accepts an array of integers and returns the average of those integers. Do not use any libraries for calculating the average. You must demonstrate appropriate use of parameters, returning and assigning values, and use of a loop. Note — just write the function at this point, we'll *use* it in the next task. You shouldn't have a complete program or even code that outputs anything yet at the end of this question.



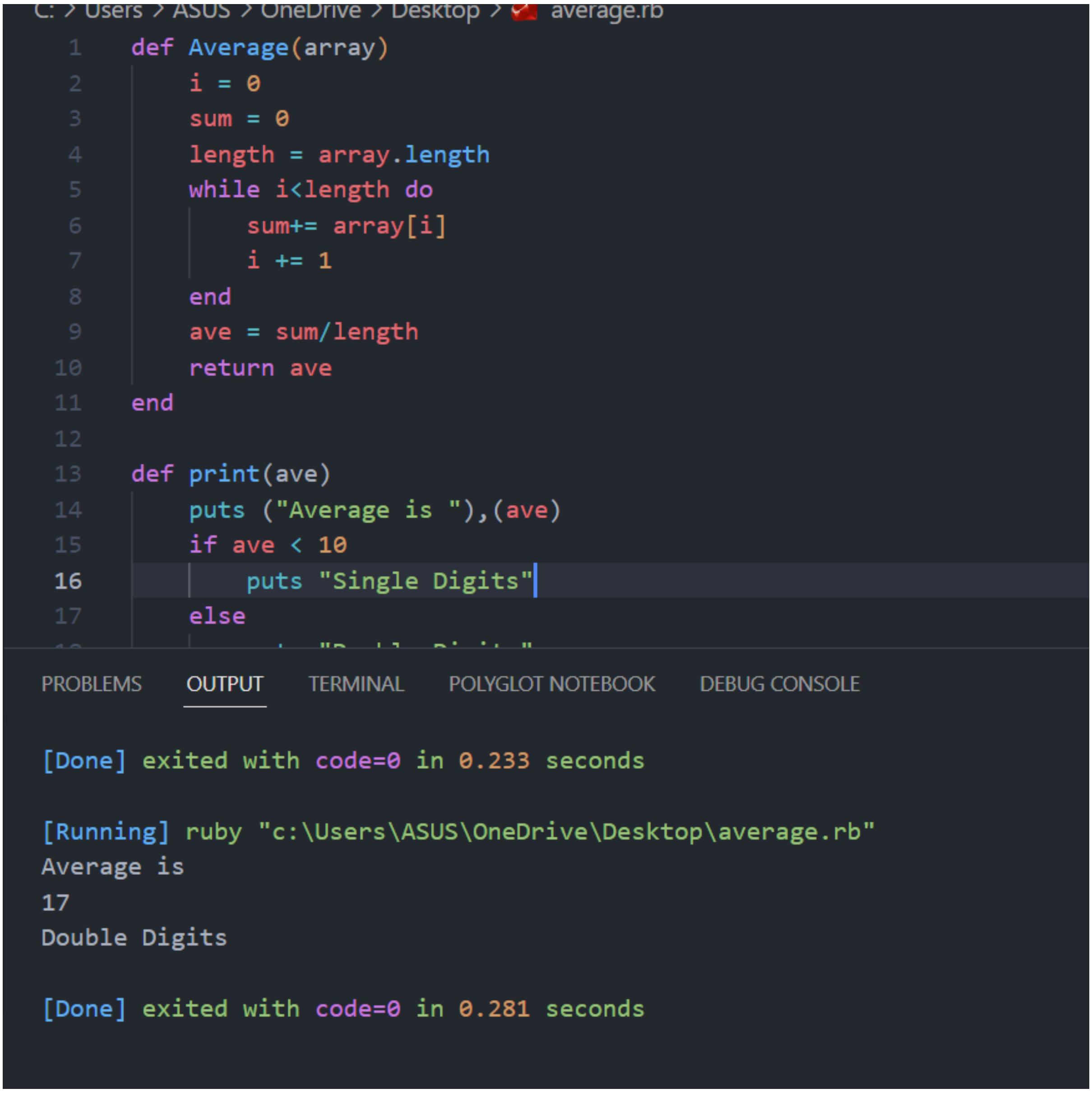
```
def Average(array)
    i = 0
    sum = 0
    length = array.length
    while i<length do
        sum+= array[i]
        i += 1
    end
    ave = sum/length
    return ave
end
```

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



```
def Average(array)
    i = 0
    sum = 0
    length = array.length
    while i<length do
        sum+= array[i]
        i += 1
    end
    ave = sum/length
    return ave
end

def print(ave)
    puts ("Average is "),(ave)
    if ave < 10
        puts "Single Digits"
    else
        puts "Double Digits"
    end
end

def main()
    result = Average([1,2,3,4,7,12,90])
    print(result)
end
main()
```

10. To the code from 9, add code to print the message “Double digits” if the average is above or equal to 10. Otherwise, print the message “Single digits”. Provide a screenshot of your program running.



```
def Average(array)
    i = 0
    sum = 0
    length = array.length
    while i<length do
        sum+= array[i]
        i += 1
    end
    ave = sum/length
    return ave
end

def print(ave)
    puts ("Average is "),(ave)
    if ave < 10
        puts "Single Digits"
    else
        puts "Double Digits"
```

```
[Done] exited with code=0 in 0.233 seconds

[Running] ruby "c:\Users\ASUS\OneDrive\Desktop\average.rb"
Average is
17
Double Digits

[Done] exited with code=0 in 0.281 seconds
```