

DEAKIN UNIVERSITY

OBJECT ORIENTED DEVELOPMENT

ONTRACK SUBMISSION

C# Essentials: Repetition

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Outcome	Weight
Evaluate Code	◆◆◆◆◆
Principles	◆◆◆◆◆
Build Programs	◆◆◆◆◆
Design	◆◆◆◆◆
Justify	◆◆◆◆◆

Like the first task, this task is broken into multiple pieces, with each requiring code to be analysed and/or small programs to be designed and programmed. There are a range of loops used to reinforce different approaches to repetition and logical operators used to for flow control and decision making.

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```
1  using System;
2
3  namespace Program_1
4  {
5      class Repetition
6      {
7          static void Main(string[] args)
8          {
9              int sum = 0;
10             double average;
11             int upperbound = 100;
12
13             for (int number = 1; number <= upperbound; number++)
14             {
15                 sum += number;
16                 //Console.WriteLine("Current number: " + number + " the sum is " +
17                     ↪ sum);
18             }
19
20             average = (double)sum / upperbound;
21
22             Console.WriteLine("The sum is " + sum);
23             Console.WriteLine("The average is " + average);
24
25             sum = 0; // reset back to 0 for while loop approach
26             average = 0.0; // reset back to 0
27             int num = 1;
28             while (num <= upperbound)
29             {
30                 sum += num;
31                 //Console.WriteLine("Current number: " + number + " the sum is " +
32                     ↪ sum);
33                 num++;
34             }
35
36             average = (double)sum / upperbound;
37
38             Console.WriteLine("The sum is " + sum);
39             Console.WriteLine("The average is " + average);
40
41             num = 1;
42             sum = 0;
43             average = 0.0;
44             do
45             {
46                 sum += num;
47                 num++;
48             } while (num <= upperbound);
49
50             average = (double)sum / upperbound;
51
52             Console.WriteLine("The sum is " + sum);
53             Console.WriteLine("The average is " + average);
```

```
52         }  
53     }  
54 }
```

```
1  using System;
2
3  namespace Program_4
4  {
5      class GuessingNumber
6      {
7          // Reads string input in the console
8          /// <summary>
9          /// Reads string input in the console
10         /// </summary>
11         /// <returns>
12         /// The string input of the user
13         /// </returns>
14         /// <param name="prompt">The string prompt for the user</param>
15         public static String ReadString(String prompt)
16         {
17             Console.Write(prompt + ": ");
18             return Console.ReadLine();
19         }
20
21         // Reads integer input in the console
22         /// <summary>
23         /// Reads integer input in the console
24         /// </summary>
25         /// <returns>
26         /// The input of the user as an integer
27         /// </returns>
28         /// <param name="prompt">The string prompt for the user</param>
29         public static int ReadInteger(String prompt)
30         {
31             int number = 0;
32             string numberInput = ReadString(prompt);
33             while (!(int.TryParse(numberInput, out number)))
34             {
35                 Console.WriteLine("Please enter a whole number");
36                 numberInput = ReadString(prompt);
37             }
38             return Convert.ToInt32(numberInput);
39         }
40
41         // Reads integer input in the console between two numbers
42         /// <summary>
43         /// Reads integer input in the console between two numbers
44         /// </summary>
45         /// <returns>
46         /// The input of the user as an integer
47         /// </returns>
48         /// <param name="prompt">The string prompt for the user</param>
49         /// <param name="minimum">The minimum number allowed</param>
50         /// <param name="maximum">The maximum number allowed</param>
51         public static int ReadInteger(String prompt, int minimum, int maximum)
52         {
53             int number = ReadInteger(prompt);
```

```
54         while (number < minimum || number > maximum)
55         {
56             Console.WriteLine("Please enter a whole number from " +
57                               minimum + " to " + maximum);
58             number = ReadInteger(prompt);
59         }
60         return number;
61     }
62
63     static void Main(string[] args)
64     {
65         int minimum = 1;
66         int maximum = 100;
67         int user1Number = ReadInteger(
68             "USER1 Enter the number you are thinking of between " +
69             minimum + " and " + maximum);
70         string prompt = "USER2 Enter a guess";
71         int user2Guess = ReadInteger(prompt, minimum, maximum);
72         while (user2Guess != user1Number)
73         {
74             Console.WriteLine("You missed it. Guess again");
75             user2Guess = ReadInteger(prompt);
76         }
77         Console.WriteLine("YOU GUESSED IT NOSTRADAMUS");
78     }
79 }
80 }
```

```
1  using System;
2
3  namespace Program_5
4  {
5      class DivisibleFour
6      {
7          // Reads string input in the console
8          /// <summary>
9          /// Reads string input in the console
10         /// </summary>
11         /// <returns>
12         /// The string input of the user
13         /// </returns>
14         /// <param name="prompt">The string prompt for the user</param>
15         public static String ReadString(String prompt)
16         {
17             Console.Write(prompt + ": ");
18             return Console.ReadLine();
19         }
20
21         // Reads integer input in the console
22         /// <summary>
23         /// Reads integer input in the console
24         /// </summary>
25         /// <returns>
26         /// The input of the user as an integer
27         /// </returns>
28         /// <param name="prompt">The string prompt for the user</param>
29         public static int ReadInteger(String prompt)
30         {
31             int number = 0;
32             string numberInput = ReadString(prompt);
33             while (!(int.TryParse(numberInput, out number)))
34             {
35                 Console.WriteLine("Please enter a whole number");
36                 numberInput = ReadString(prompt);
37             }
38             return Convert.ToInt32(numberInput);
39         }
40
41         // Reads integer input in the console between two numbers
42         /// <summary>
43         /// Reads integer input in the console between two numbers
44         /// </summary>
45         /// <returns>
46         /// The input of the user as an integer
47         /// </returns>
48         /// <param name="prompt">The string prompt for the user</param>
49         /// <param name="minimum">The minimum number allowed</param>
50         /// <param name="maximum">The maximum number allowed</param>
51         public static int ReadInteger(String prompt, int minimum, int maximum)
52         {
53             int number = ReadInteger(prompt);
```

```
54         while (number < minimum || number > maximum)
55         {
56             Console.WriteLine("Please enter a whole number from " +
57                               minimum + " to " + maximum);
58             number = ReadInteger(prompt);
59         }
60         return number;
61     }
62     static void Main(string[] args)
63     {
64         int n = ReadInteger("Enter a number larger than 1");
65         for (int i = 1; i <= n; i++)
66         {
67             if ((i % 4 == 0) && (i % 5 != 0))
68             {
69                 Console.WriteLine(i);
70             }
71         }
72     }
73 }
74 }
```