

Mark Scheme (Results)

November 2021

Pearson Edexcel International GCSE
In Computer Science (4CP0/2A)
Paper 02: Application of Computational Thinking

Coding

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<tr><th>Question</th><th>mp</th><th>Answer</th><th>Additional Guidance</th><th>Mark</th></tr>
<tr><td rowspan="4">1 (d)</td><td colspan="2">Award 1 mark for each of:</td><td rowspan="4"></td><td rowspan="4">(3)</td></tr>
<tr><td>D1</td><td>= changed to == (1)</td></tr>
<tr><td>D2</td><td>Condition changed to less than / final two print statements swapped (1)</td></tr>
<tr><td>D3</td><td>else changed to else (1)</td></tr>
<tr><td colspan="5">Code examples</td></tr>
<tr><td>C#</td><td colspan="4">

```
if (number1 == number2)
{
    Console.WriteLine("The numbers are equal");
}
else if (number1 < number2)
{
    Console.WriteLine("The highest number is " + number2 + " and the lowest number is " + number1);
}
else
{
```

</td></tr>
<tr><td>Java</td><td colspan="4">

```
if (number1 == number2)
{
    System.out.print("Numbers are equal");
}
else if (number1 < number2)
{
   System.out.print("The highest number is " + number2 + " and the lowest number is " +number1);
}
else
```

</td></tr>
<tr><td>Python</td><td colspan="4">

```
if number1 == number2:
    print("Numbers are equal")
elif number1 < number2:
    print("The highest number is", number2, "and the lowest number is", number1)
else:
```

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</table>

Question	mp	Answer	Additional Guidance	Mark
1 (e)	**Award 3 marks for:**			
	E1	Prompt for a number to be input (1)		
	E2	Input stored in an integer variable (1)		
	E3	Loop used (1)		
	E4	Loop iterates only for the values 1 – 12 (1)		
	E5	Display is correct when program executes (1)		(5)

Code examples

C#

```
// Print prompt and get number from user
Console.Write("Enter the number: ");
int num = Convert.ToInt32(Console.ReadLine());

// Create loop to display the table
for (int count = 1; count <= 12; count++)
{
    Console.WriteLine(count + " x " + num + " is " + count * num);
}
Console.ReadLine();
```

Java

Java

```java
        // Add your code here
        Scanner input = new Scanner(System.in);
        String inputWord = "";

        // While there is a word run the program
        while (!inputWord.equals("1")) {

            int shortest = 5000;
            int longest = 0;
            String shortestWord = "";
            String longestWord = "";

            System.out.println("Enter a word or 1 to exit ");
            System.out.println("--------------------------------------------------------------------------------");
            inputWord = input.nextLine();
            if (!inputWord.equals("1")){
                // Find words that begin with the same letter as the input word
                int count = 0;

                // Get each word in the array
                for (String word: wordArray){

                    // If the first character of the word is the same as the first character of
                    // the input word then print the word
                    if (word.charAt(0) == inputWord.charAt(0)){
                        System.out.println(word);
                        count ++;
                    }
                } // End of for loop

                // Print the total number of words that begin with the same letter
                System.out.println(count + " word(s) beginning with "+ inputWord.charAt(0));
                System.out.println("--------------------------------------------------------------------------------");

                // Find words that contain the input word
                count = 0;

                // Get each word in the array
                for (String word: wordArray){
                    // Check to see if the word contains the inputWord
                    if (word.contains(inputWord)){
                        count ++;
                        System.out.println(word);

                        // Set the length of the word
                        int length = word.length();

```

```
                    // If the length is longer than the current longest replace it and the longestWord
                    if (longest < length) {
                        longest = length;
                        longestWord = word;
                    }

                    // If the length is shorter than the shortest replace it and the shortestWord
                    if (shortest > length){
                        shortest = length;
                        shortestWord = word;
                    }
                } // End of checking word
            } // End of for loop

            // Print the number of words, the number of characters in the longest and
            // shortest word, the longest and the shortest word
            if( count > 0){
                System.out.println(count + " word(s) with "+ inputWord + " in them");
                System.out.println("The longest word has " + longest + " characters");
                System.out.println("The shortest word has " + shortest + " characters");
                System.out.println("The longest word is " + longestWord + " characters");
                System.out.println("The shortest word is " + shortestWord + " characters");
                System.out.println("--------------------------------------------------------------------------------");
            } else {
                System.out.println("There were 0 words that had all the letters from " + inputWord + " in them");
                System.out.println("--------------------------------------------------------------------------------");
            } // End of printing words
        }
    } // End of while loop
```

Python

```python
# While there is a word run the program
while inputWord !="1":

    shortest = 5000
    longest = 0
    shortestWord = ""
    longestWord = ""

    inputWord = input("Enter a word or 1 to exit: ")
    print("--------------------------------------------------------------------------------")

    if inputWord !="1":
        # Find words that begin with the same letter as the input word
        count = 0
        # Get each word in the array
        for word in wordArray:
            # If the first character of the word is the same as the first character of
            # the input word then print the word
            if word[0] == inputWord[0]:
                print(word)
                count = count + 1

        # Print the total number of words that begin with the same letter
        print("\n",count,"word(s) beginning with",inputWord[0])
        print("--------------------------------------------------------------------------------")

        # Find words that contain the input word
        count = 0
        # Get each word in the array
        for word in wordArray:
            # Check to see if the word contains the inputWord
            if inputWord in word:
                count = count + 1
                print(word)
                # Set the length of the word
                length = len(word)

                # If the length is longer than the current longest replace it and the longestWord
                if longest < length:
                    longest = length
                    longestWord = word

                # If the length is shorter than the shortest replace it and the shortestWord
                if shortest > length:
                    shortest = length
                    shortestWord = word
```

```
59
60          # Print the number of words, the number of characters in the longest and
61          # shortest word, the longest and the shortest word
62          if count > 0:
63              print("\n",count,"word(s) with",inputWord,"in them")
64              print("The longest word has",longest,"letters")
65              print("The shortest word has",shortest,"letters")
66              print("The longest word is",longestWord)
67              print("The shortest word is",shortestWord)
68              print("--------------------------------------------------------------------------")
69          else:
70              print("There were 0 words with all the letters from",inputWord,"in them")
71          # ------------------------------------------------------------------------------------------
72
73      # End the program when there are no more words
74      print("End of program")
```

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