

Software Design & Development: Revision Questions 4

1. A program is used to replace the first space in the name of a school with another character provided using ASCII.

The user will provide two inputs, the name of a school and the number of ASCII positions to increase the space by (e.g. Belmont Academy could become Belmont-Academy).

Both inputs are passed to a function that generates and returns the new school name.

...

```
Line 11 FUNCTION replaceSpace (STRING schoolName,  
                                INTEGER replacementDifference) RETURNS STRING  
  
Line 12 DECLARE newSchool INITIALLY ""  
Line 13 DECLARE letterNum INITIALLY 0  
Line 14 DECLARE currentLetter INITIALLY ""  
Line 15 FOR index FROM 1 TO LEN(schoolName)  
Line 16     SET currentLetter TO schoolName[index]  
Line 17     SET letterNum TO <ascii value of  
                currentLetter>  
Line 18     IF letterNum = 32  
Line 19         SET letterNum to letterNum +  
                replacementDifference  
Line 20     END IF  
Line 21     SET newSchool TO newSchool & <character  
                equivalent of letterNum>  
Line 22 END FOR  
Line 23 RETURN newMessage  
Line 24 END FUNCTION  
...  
...  
Line 52 RECEIVE school FROM STRING KEYBOARD  
Line 53 RECEIVE change FROM INTEGER KEYBOARD  
Line 54 SET updatedSchool TO replaceSpace(school, change)  
Line 55 DISPLAY updatedSchool  
...
```

- (a)** Identify the actual and formal parameters

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(b) A breakpoint is set at line 22. The function is tested by entering the two inputs shown

Input 1: Don Academy

Input 2: 13

Copy and complete the table below to show the values of character and letterCount each time the execution stopped.

Break in Execution	currentLetter	newSchool
First		
Second		
Third		
Fourth		
Fifth		

(c) Using a programming language with which you are familiar, identify the pre-defined functions that could be used in lines 17 and 21.

(d) Give an example of an execution error that could occur when related to the function inputs. Which line of code would cause the execution error to occur?

- Other than breakpoints, state three other debugging techniques that can be used to find errors.
- A program stores the string "kind positive yourself" in variable called, *wellbeing*. Using a programming language of your choice, write a line of code that will extract the word "positive" from the input string and store it in a variable called, *middle*.
- State the output from the following line of code:
`SEND 6 mod 4 TO DISPLAY`
- When developing software, explain why the iterative model would be a better choice than agile when the client is based on the other side of the world.
- Explain why is it a bad idea to use global variables in a program?

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