|  |  |  |
| --- | --- | --- |
| **Evaluation parameter** | **Does not meet specifications** | **Meets specifications** |
| **Problem statement** |  |  |
| Problem Statement must be clearly defined |  |  |
| Expected input and output formats must be described |  |  |
| Explain the problem statement with an example(if applicable) |  |  |
| **Expected input & output** |  |  |
| Minimum of 5 test cases (if applicable) |  |  |
| Coverage |  |  |
| Border condition |  |  |
| Unexpected inputs |  |  |
| **Solution** |  |  |
| The correctness of the solution. |  |  |
| Check for all the elements (tokens) of the problem (Assignment, Arithmetic, conditional, relational, input, output etc) |  |  |
| **Trace Table :** |  |  |
| Columns are variables, conditions, print statements |  |  |
| Order |  |  |
| Trace table for each function(If applicable) |  |  |
| labeling the columns |  |  |
| Coverage (conditions, iterations... etc) |  |  |
| **Final Result** |  |  |
| Executable File Submission |  |  |
| **Executable File** |  |  |
| Check with all test cases |  |  |

**Problem Statement:** Determine the vowels and consonants present in a string

**Explanation:** In this problem, we determine the vowels (ie Lower case letters a, e , I, o , u) and uppercase vowels ( A, E, I, O, U). The remaining alphabets are termed as consonants.

**Algorithm** :

To determine vowels in a String, follow these steps:

Step 1: Start

Step 2: Read the input String s

Step 3: Intialise the for loop index position i=0 and find n= Length(s)

Step 4: Check condition i<n , If true go to Step 4.1

Step 4.1: Check if String s[i] =( ‘a’ OR ‘e’ OR ‘I’ OR ‘u’) OR ( ‘A’, ‘E’,”I’,’O’,’U’)

Step 5: If true Print s[i] Else go to Step 6

Step 6: Increment i=i+1 , Go to Step 4

Step 7: End

**Pseudocode:**

**Trace table:**

Test Case 1: String=’To’

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **n** | **i** | **I<n** | **I=i+1** | **S[i]= (vowels)** |  |
| S=’To’ | 0 | O<2 | 1 | S[0]=’T’ | False |
| N= length(s)=2 | 1 | 1<2 | 2 | S[1]=’o’ | True |
|  | 2 | 2<2 | ENDIF |  |  |
|  |  |  |  |  | Print S[i] |
|  |  |  | END |  |  |
|  |  |  |  |  |  |

Test Case 2: String = ‘ Hello’

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **n** | **i** | **I<n** | **I=i+1** | **S[i]= (vowels)** |  |
| S=’Hello’ | 0 | O<5 | 1 | S[0]=’H’ | False |
| N= length(s)=5 | 1 | 1<5 | 2 | S[1]=’e’ | True |
|  | 2 | 2<5 | 3 | S[2]=’l’ | False |
|  | 3 | 3<5 | 4 | S[3]=’l’ | False |
|  | 4 | 4<5 | 5 | S[4]=’0’ | True |
|  | 5 | 5<5 | End IF |  |  |
|  |  |  |  |  | Print S[i] |
|  |  |  | END |  |  |

Test Case 3: If String=’All’

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **n** | **i** | **I<n** | **I=i+1** | **S[i]= (vowels)** |  |
| S=’All’ | 0 | O<3 | 1 | S[0]=’A’ | True |
| N= length(s)=3 | 1 | 1<3 | 2 | S[1]=’l’ | False |
|  | 2 | 2<3 | 3 | S[2]=’l’ | False |
|  | 3 | 3<3 | ENDIF |  |  |
|  |  |  |  |  | Print S[i] |
|  |  |  | END |  |  |

Test Case 4: If String=’ Puppy p’

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **n** | **i** | **I<n** | **I=i+1** | **S[i]= (vowels)** |  |
| S=’Puppy p’ | 0 | O<7 | 1 | S[0]=’P’ | False |
| N= length(s)=7 | 1 | 1<7 | 2 | S[1]=’u’ | True |
|  | 2 | 2<7 | 3 | S[2]=’p’ | False |
|  | 3 | 3<7 | 4 | S[3]=’p’ | False |
|  | 4 | 4<7 | 5 | S[4]=’y’ | False |
|  | 5 | 5<7 | 6 | S[5]=’ ‘ | False |
|  | 6 | 6<7 | 7 | S[6]=’p’ | False |
|  | 7 | 7<7 | 8 | S[7] |  |
|  |  |  |  | Endif |  |
|  |  |  |  |  | Print S[i] |
|  |  |  |  | End |  |
|  |  |  |  |  |  |

**Final Result:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Expected input** | **Expected output** | **Actual output** | **Test result** |
|  |  |  |  |
| Hello | e o | e o | Enter String Hello  E o |
| To | o | o | Enter String To  o |
| All | A | A | Enter String All  A |
| Exam | E a | E a | Enter String Exam  E a |
| cubic | U I | U I | Enter String cubic  U i |
|  |  |  |  |

Executable file:

