Dat Pham

CS 362

Random Testing

String 2018

I/ How to finds/prints the error message

Before implement “inputChar” and “inputString” functions, I look around the code of random test. The purpose to find what is a character will be choose for random, and how many characters in array string will be choose. A “testme” function is a while loop with 9 if statement. The last if statement checks if a random string contains a specific sequence of characters and state variable is 9. The error is found and the program exits.

When we look condition of 9 if statement, we can see the value of character c to something from ‘Space’ to ‘~’ of ASCII, and inputString have 5 value of character to something from ‘a’ to ‘z’. The testme function is tested by calling the two function above and repeat until inputChar return state 9 and inputString have value ‘r’, ‘e’, ‘s’, ‘e’, ‘t’, ‘\0’.

II/ How to develop my random tester and it works

When we understood purpose and goal of testme function, we will implement inputString and inputChar. Remember the inputChar function return a char type, and the testme function will catch this variable, and get value from this variable. In addition, the inputString return pointer char* type.

Looking character table of ASCII. We can determine the character range of ‘Space’ to ‘~’ is 32 to 126. The range of ‘a’ to ‘z’ was chosen for inputString is 97 to 122. Random character function, we was learned from previous CS 165 and CS 344. Thus, we can implement two function is trivial.

```
char inputChar()
{
   char character;
        char *pointer = &character;
        int maxCharacter = 126; // to character '~' in ASCII table
        int minCharacter = 32;  // from character 'Space' in ASCII table
        int temp = maxCharacter - minCharacter;
        *pointer = (rand() % (temp +1)) + minCharacter;
        return character;
}
```

```
char *inputString()
{
   char *stringCharacter;
        char arrayCharacter[5];
        int maxCharacter = 122; // 'z' character
        int minCharacter = 97;  // 'a' character
        int temp = maxCharacter - minCharacter;
        int i=0;
        for(i = 0;i<5;i++){
                arrayCharacter[i] = (rand() %(temp+1)) + minCharacter;
        }
        stringCharacter = arrayCharacter;
        return stringCharacter;
}
```

The result of inputChar can pass the nine if statement, but inputString function can have many difference situations of result because the range for making string result huge. Even though the character range was cut down from the ASCII table to only lowercase alphabet, there was still many options to generate a random string. Thus, the program ran for over millions of iterations.