

Vg101. Introduction to Computer and Programming (Fall 2018)

Homework #6

Assigned: 11/8/2018

Due: 11/13/2018

**Notes for submission:** We are going to use the online judge (OJ) to grade your homework, so please submit your homework in the OJ. Please see the instruction for OJ submission on Canvas Announcement. For backup purpose, you should also submit your homework to the Canvas. **For canvas submission, please name the file using the format bellow: “(Your last name)(Initial of your first name)\_sYourStudentID\_midterm1.zip” which includes all your source codes. For example, WuJ\_s12345678\_hw6.zip.** And the source file name for each problem should be Problem1.c, Problem2.c, etc.

All of the following programs should be written in C

1. Complete the “*char\* strshift(char \*str, int shift)*” in the following codes to shift a character string. The input parameter *str* is a C-style string, and *shift* is an integer indicating the shifting steps. The return is a pointer pointing to the result string *str*. For example, given input string “abcd”, the shifting result is “dabc” if *shift* = 1, and “bcda” if *shift* = -1. Notice *shift* can be negative, meaning the string is shifted to the left.

```
#include <stdio.h>
```

```
#include <string.h>
```

```
char* strshift(char *str, int shift)
```

```
{/* TODO: complete this function as instructed */
```

```
    return str;
```

```
}
```

```
/* safe version of gets() */
```

```
char* vg101_gets(char *str, int count)
```

```
{
```

```
    int i = 0;
```

```
    char ch = getchar();
```

```
    while (ch != '\n' && i < count-1)
```

```
    {
```

```
        str[i++] = ch;
```

```
        ch = getchar();
```

```
    }
```

```
    str[i] = '\0'; /* add the null character */
```

```
}
```

```
int main()
```

```
{
```

```

int shift;
char str[256]; /* suppose the length of string is less than 256 */
char *pstr;

printf("Please input a string: ");
vg101_gets(str, 256);
printf("Please input the shift: ");
scanf("%d", &shift);
pstr = strshift(str, shift);
printf("str = %s\n", str);
printf("*pstr = %s\n", pstr);
return 0;
}

```

2. Complete the “void Encode(char \*str)” function in the following codes to encode a C-style string str such that any letters will be changed to its subsequent letter in the alphabet (notice that ‘z’ or ‘Z’ will be changed to ‘a’ or ‘A’), while other characters remains the same. For example, “Vg101” will be encoded as “Wh101”.

```

void Encode(char *str)
/* TODO: complete this function as instructed */
}

/* safe version of gets() */
char* vg101_gets(char *str, int count)
{
    int i = 0;
    char ch = getchar();

    while (ch != '\n' && i < count-1)
    {
        str[i++] = ch;
        ch = getchar();
    }
    str[i] = '\0'; /* add the null character */
}

int main()
{
    char str[256]; /* suppose the length of string is less than 256 */

    printf("Please input a string: ");
    vg101_gets(str, 256);
}

```

```
    Encode(str);  
    printf("str = %s\n", str);  
    return 0;  
}
```