```cpp
/*******************************************************************************
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 * CLASS      : CS1C
 * SECTION    : MW 5pm
 * Assign #10 : Recursion
 * DUE DATE   : 6 April 2020
 *******************************************************************************/

#include<iostream>  //using input and output
#include<string>//using string
using namespace std;//using namespace standard

void reverse(string& alpha, int x, int y)     //function reverse
{
    //Variables

    char t; //PROCESS - using to store the swapped character of the string

    if ((x>y))
    {                                   //here does not use any additional string.
        return;
    }

    //PROCESS - swapping the characters
    t=alpha[x];
    alpha[x]=alpha[y];
    alpha[y]=t;
    reverse(alpha, x + 1 , y - 1); //revesre function called again (recursion)
}

int main()
{
    /*****************************************************************
     * Recursion
     * ___________________________________________________________
     * This program has a pre-saved alphabet string data. the
     * program promts the user for two integers, the starting
     * index and the ending index. then the program reverses the
     * alphabet letter character of the index in the string from
     * the starting index to the ending index (user input). the
     * program does that two times and the third time the program
     * has presaved data on the starting and ending index so that
     * the whole string gets reversed
     * ___________________________________________________________
     * INPUT: u; k; - input for the start and end index
     *
     * OUTPUT: FIRST - the string with start to end index characters
     *         reversed
     *         SECOND - the string with start to end index characters
     *         reversed
     *         THIRD - the whole string reversed
     *
     *****************************************************************/

    cout << "/*****************************************************************\n"
         << "* Recursion\n"
         << "* ___________________________________________________________\n"
         << "* This program has a pre-saved alphabet string data. the \n"
```

```
60          << "* program promts the user for two integers, the starting \n"
61          << "* index and the ending index. then the program reverses the \n"
62          << "* alphabet letter character of the index in the string from\n"
63          << "* the starting index to the ending index (user input). the \n"
64          << "* program does that two times and the third time the program \n"
65          << "* has presaved data on the starting and ending index so that \n"
66          << "* the whole string gets reversed\n"
67          << "* ____________________________________________________________\n"
68          << "* INPUT: u; k; - input for the start and end index\n"
69          << "*\n"
70          << "* OUTPUT: FIRST - the string with start to end index characters\n"
71          << "*         reversed\n"
72          << "*         SECOND - the string with start to end index characters\n"
73          << "*         reversed\n"
74          << "*         THIRD - the whole string reversed\n"
75          << "*\n"
76          << "*************************************************************/\n\n";
77
78      //Variables
79
80      string alpha;   //PROCESS - stores the alphabet string
81      int u,k;    //INPUT & PROCESS - stores the number of start and end of characters
82                      //for swapping
83
84      //FIRST MODIFYING
85      cout <<"The string input as default (Alphabet):\n";          //storing.
86      alpha = "abcdefghijklmnopqrstuvwxyz";
87      cout << alpha << endl;
88      cout<<"enter starting index:"; //reading starting index.
89      cin>>u;
90      cout<<"enter ending index:";     //reading ending index.
91      cin>>k;
92      reverse(alpha, --u, --k);   //reverse function called
93      cout<<endl<<"your modified string is "<<alpha;      //printing modified string
94      cout << endl << endl;
95
96      //SECOND MODIFYING
97      alpha = "abcdefghijklmnopqrstuvwxyz";   //reinitializing the data
98      u = 0;
99      k = 0;
100     cout<<"enter starting index:"; //reading starting index.
101     cin>>u;
102     cout<<"enter ending index:";     //reading ending index.
103     cin>>k;
104     reverse(alpha, --u, --k);   //reverse function called
105     cout<<endl<<"your modified string is "<<alpha;      //printing modified string
106     cout << endl << endl;
107
108     //THIRD MODIFYING
109     alpha = "abcdefghijklmnopqrstuvwxyz";   //reinitializing the data
110     u = 1;  //storing the pre-input data for the whole length of alphabet
111     k = 26;
112     reverse(alpha, --u, --k);
113     cout<<endl<<"your modified string is "<<alpha;      //printing modified string
114
115
116
117
118
```

```
119     return 0;
120 }
121
```