```cpp
/*
Memo for P4
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*/

#include <iostream>
#include <cstdlib>

using namespace std;

void Pause();
int GetNumTerms();                                  //Value returning function
int NextA046901(int intPrev, int intTerm);          //Example of a pass-by-value and value returning function
void ReverseString(string& strSentence);            //Example of a pass-by-reference.

int main()
{
    bool blnLoop = true;
    char chInput = '\0';

    do
    {
        system("cls");          //Clears the screen on Windows.  The following is also acceptable, system("clear").  This clears the screen on Linux based terminals.
        //Output the menu and get input
        cout << "Option A: Display A046901 series." << endl
             << "Option B: Calculate the sum of n-number of terms in the A046901 series." << endl
             << "Option C: Read in a sentence and revese the characters." << endl
             << "Option X: Exit the program" << endl;
        cin >> chInput;

        //Evaluate the selection and execute the corresponding section of code
        switch(chInput)
        {

        case 'a':
        case 'A':
            {
                int intNum = 0;
                intNum = GetNumTerms();             //Function returns the number of terms.
                while(intNum <=1)
                {
                    cerr << "Please enter a number greater than 1" << endl;
                    cin.ignore(100,'\n');
                    intNum = GetNumTerms();
                }
                int intPrev = 1;
                cout << "1 ";
                for(int n=2;n<=intNum;n++)
                {
                    int intNew = NextA046901(intPrev,n);
                    cout << intNew << " ";
                    intPrev = intNew;
                }
                cout << endl;
                break;
            }
        case 'b':
        case 'B':
            {
                int intNum = 0;
                intNum = GetNumTerms();
                while(intNum <=1)
                {
                    cerr << "Please enter a number greater than 1" << endl;
                    cin.ignore(100,'\n');
                    intNum = GetNumTerms();
                }
                int intPrev = 1;
                int intSum = intSum + intPrev;
                for(int n=2;n<=intNum;n++)
                {
                    int intNew = NextA046901(intPrev,n);
                    intSum = intSum + intNew;
                    intPrev = intNew;
                }
                cout << "The sum of " << intNum << " terms are: " << intSum;
                cout << endl;
                break;
            }
        case 'c':
        case 'C':
```

```
83              {
84                  string strSentence;
85                  cout << "Please type in a sentence that will be reversed:" << endl;
86                  cin.ignore(100,'\n');
87                  getline(cin, strSentence);
88                  ReverseString(strSentence);                     //Transforms strSentence into a
    reverse format
89                  cout << "The reverse sentence is:" << endl;
90                  cout << strSentence << endl;
91                  break;
92              }
93          case 'x':
94          case 'X':
95              {
96                  blnLoop = false;
97                  break;
98              }
99          default:
100             cerr << "Please select a valid option" << endl;
101         }
102         Pause();
103     }while(blnLoop);
104
105
106     return 0;
107 }
108
109 /*
110 The function waits for the Enter button to be pressed, simulating a pause
111 Parameters: None
112 Return: None
113 */
114 void Pause()
115 {
116     cout << "Press Enter to continue" << endl;
117     cin.ignore(100,'\n');
118     cin.get();
119
120 }
121
122 /*
123 The function provides a prompt and ensures a numeric value is returned that represents the
    number of terms for the numeric sequence
124 Parameters: None
125 Return: The number of terms required for the series.
126 */
127 int GetNumTerms()
128 {
129     int intNum = 0;
130     cout << "Number of terms for A046901 to be displayed (>1):";
131     cin >> intNum;
132
133     while(cin.fail())
134     {
135         cin.clear();
136         string strJunk;
137         cin >> strJunk;
138         cerr << "Please type in a valid number greater than 1" << endl;
139         cout << "Number of terms for A046901 to be displayed (>1):";
140         cin >> intNum;
141     }
142
143     return intNum;
144 }
145
146 /*
147 Calculates the next term in the A046901 series
148 Parameters: The value of the previous term and the number of the current term in the sequence.
149 Return: The value of the current term.
150 */
151 int NextA046901(int intPrev, int intTerm)
152 {
153     int intNewValue = 0;
154     if(intPrev > intTerm)
155         intNewValue = intPrev - intTerm;
156     else
157         intNewValue = intPrev + intTerm;
158
159     return intNewValue;
160 }
161
162 /*
163 Transforms the given string parameter into a reverse format
164 Parameters: string. The string that will be transformed
```

```
165   Return: None
166   */
167   void ReverseString(string& strSentence)
168   {
169       string strNew;
170       for(char c:strSentence)
171       {
172           strNew = c + strNew;
173       }
174       strSentence = strNew;
175   }
176
```