Computer Science 1A Practical 3 Design

Problem Description

Write a menu based system which makes use of the following types of loops; do while, for, for-each. Option A must display the jacobsthal lucas sequence, Option B must determine the factors of a given number, Option C must process a given string, Option X must end the application.

Input and Output

Input

Input	Mechanism
Option	Standard input stream
Number of terms	Standard input stream
Number	Standard input stream
String	Standard input stream

Output

Output	Mechanism
Menu Options	Standard output stream
Case ‘a’ user prompt	Standard output stream
Jacobsthal Lucas Sequence	Standard output stream
Conversion error	Standard error stream
Default	Standard error stream
Case ‘b’ user prompt	Standard output stream
Factors	Standard output stream
Case ‘c’ user prompt	Standard output stream
Processed string	Standard output stream

Data Format

Identifier	Data type	Description
intNumber	Integer	The number of which its factors will be calculated
chOption	Character	Options in the menu system
blnContinue	Boolean	Loop control variable
stOption	String	Options in the menu system
intNumOfTerms	Integer	The number of terms displayed in the sequence
strJunk	String	Input stream clearance
intTerm	Integer	A term in the sequence
strWords	String	String which is processed
strBlanks	String	Blank spaces

Psuedo Code

```
blnContinue ← True
do
outputs menu system option (prompt)
switch (chOption)
Case a { intNumOfTerms ← 0
            for(int i=1 ; i <= intNumOfTerms ; i++)
             { int intTerm = 0;
              intTerm = pow(2, i) + pow(-1, i);
                  output intTerm
              }
Case b { for(int i = 1; i <= intNumber; i++)
          {
```

```
            if((intNumber % i)==0)
            {
               Output  i
            }
Case C {for(char c : strLine)
            {
               output << strBlanks
                    << c << endl;
               strBlanks += " ";
            }

            for(unsigned int i  ←  0; i < strLine.length(); i++)
            {
               for(unsigned int j  ←  0; j < i; j++)
                  cout  ←  " ";
               cout << strLine[i] << endl;
            }
{
Case x { blnContinue ← False}

while(blnContinue)
```

UML Activity Diagram