|  |  |  |
| --- | --- | --- |
|  |  |  |

**CPSC165**

**Assignment#5**

**30 Points**

**Code the Program**

As you know, the computer understands only machine language. We, as humans (at least at this point in our evolution) understand numbers as being in base 10. Machine language is binary (on=1/off=0) which is base 2. So compilers and other computer interfaces need to convert our human base 10 to machine understandable base 2.

A great and desirable algorithm for doing this base 10 to base 2 conversion for integers uses a stack array object. The purpose of the algorithm is to convert base 10 numbers to base 2 (binary) representation. Since base 2, or binary, arithmetic has just two symbols: 0 and 1, all numbers are represented as a sequence of 0s and 1s. For example,

|  |  |  |
| --- | --- | --- |
| **Base 10** | | **Binary (Base 2) Equivalent** |
| 0 |  | 0 |
| 1 |  | 1 |
| 2 |  | 10 |
| 3 |  | 11 |
| 4 |  | 100 |
| 8 |  | 1000 |
| 11 |  | 1011 |
| 20 |  | 10100 |

The stack array suits this application very nicely.

Code a Java program that reads an input file one integer at a time and converts the integer to its binary equivalent using a Stack object. The input file is available on the course Canvas site. Your main program will use the Stack object via push/add and pop/delete operations

### Compile and Test

When done, compile and run your code.

Then, debug any errors until your code is error-free.

Check your output to ensure that you have the desired output, modify your code as necessary, and rebuild.

### Submit Deliverables

* Capture the Console output window and paste into a Word document. Zip the output file along with the source code files.
* Upload to canvas.