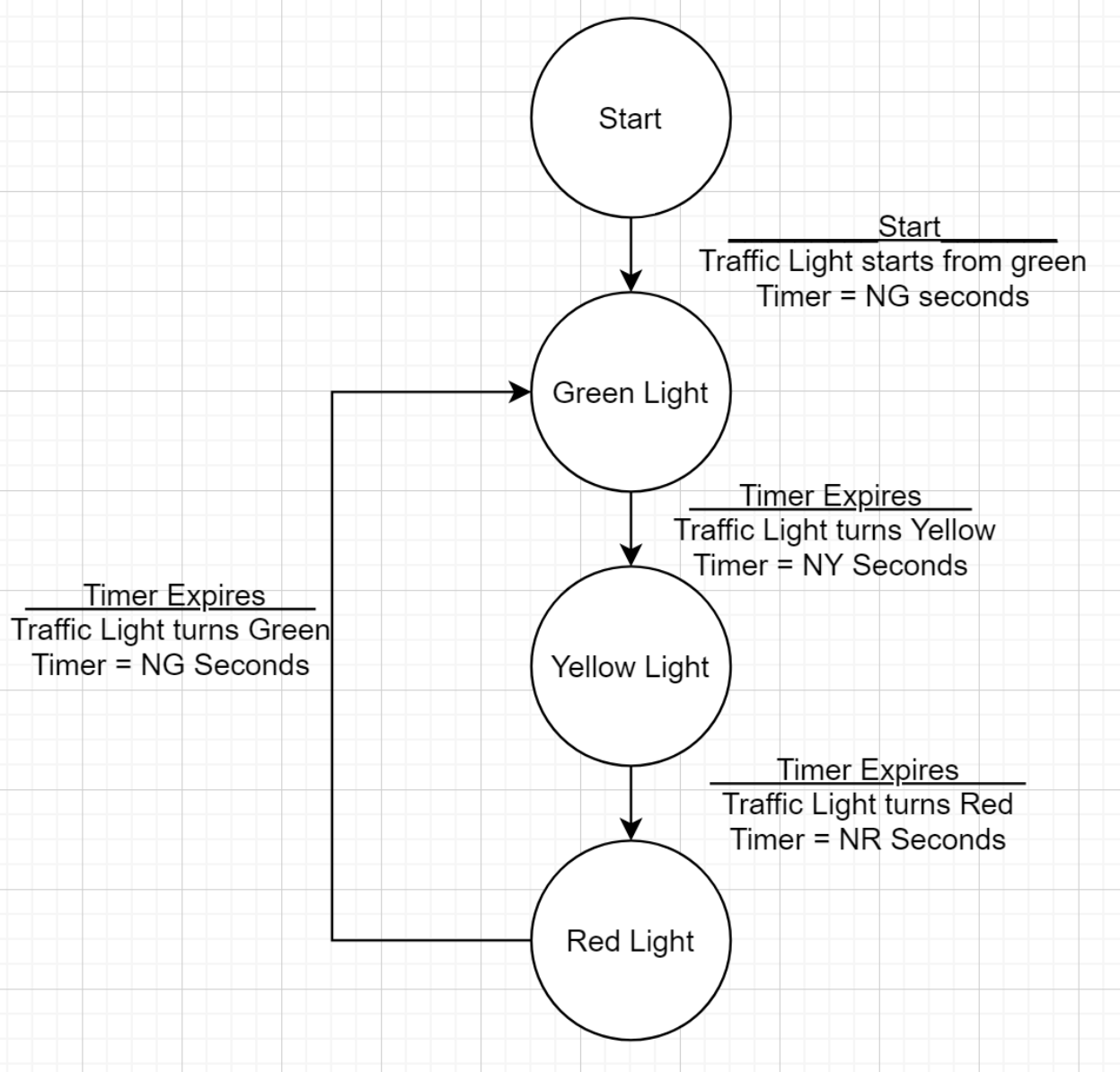
Lab 01: Design Tools

State Diagram

Draw a state diagram to describe an FSM for a single traffic light on a timer.



Structure English

Use Structured English to describe a binary search looking for a name in a contact list. Ensure any words that would be defined in a DD are underlined.

CREATE a string called Name in array form

```
READ from input to the string Name
SET Beg is index of beginning of Contact List
SET End is index of end of Contact List
DO WHILE Beg < End
        Mid = (Beg + End)/2
        IF Name>=Mid *Compare characters starting from first one*
                Beg = Mid
        ELSE
                End = Mid
        ENDIF
ENDDO
OUTPUT Name
```

Data Dictionary

Create DD to describe a student at Dalhousie. The DD should include things like program, name, age, sex, etc.

Student Info = Name + Age + Gender + Program + Student ID + Campus
Name = First Name + (Middle Name) + Last Name *String of alphabetic characters*
Age = *Numeric number*
Gender = [Male | Female]
Program = [Undergraduate | Graduate | Professional]
Student ID = B00+ *6 unique number*
Campus = [Main Campus | Engineering Campus | Truro Campus]

Decision Table

Write a decision table to verify if an X-Makina assembler label is valid or not. The definition of a label can be found in the X-Makina assembler user guide on Brightspace.

Conditions		
String less than 32 characters	Y	-
In Instruction table	N	-
In Symbol table	-	N

Begin with and alphabetic character	Y	-
Alphanumeric	Y	-
Actions		
XM3 label is valid	X	
XM3 label is not valid		X