Team Assignment 2

Team Number and Initials _____ _____ _____ _____ _____

The MIU-system is given as:

Axiom: **MI**

Rules:

1. If you possess a string whose last letter is **I**, you can add a **U** at the end.
2. Suppose you have **M*x***. Then you may add **M*xx*** to your collection.
3. If **III** occurs in one of the strings in your collection, you may make a new string with **U** in place of **III**.
4. If **UU** occurs inside one of your strings, you can drop it.

Exercises:

1. Derive the string **MUIU**, or show that it is impossible.

2. Derive the string **MU**, or show that it is impossible.

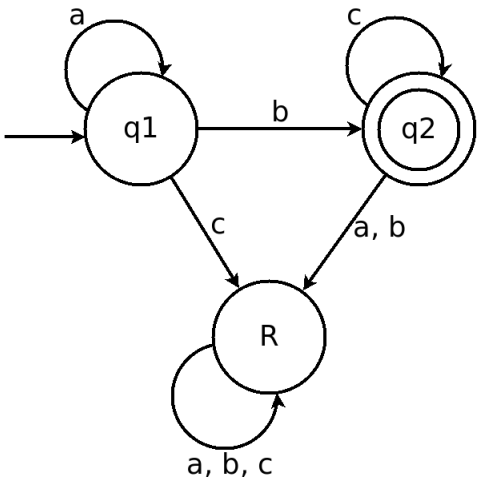

Figure 1: Machine M_1

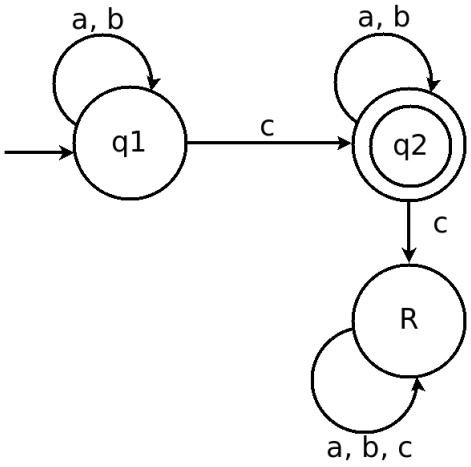

Figure 2: Machine M_2

3. What is the language $L(M_1)$?

4. What is the language $L(M_2)$?

5. Construct a DFA that recognizes the language $L(M_1) \cap L(M_2)$.

6. Construct a DFA that recognizes the language $L(M_1) \cup L(M_2)$.

7. Construct a DFA that recognizes the language $L(M_1) \circ L(M_2)$.

8. Construct a DFA that recognizes the language $L(M_2)^*$.