1. (6 pts) What is the difference between structural and physical equality? Write a Ruby example of each type of comparison.

Structural equality compares the contents of objects being compared (returns true if two references x and y point to objects with the same contents—does not have to physically be the same object).

```ruby
x == y
```

Physical equality compares the references to these objects (returns true when two references x and y point to the exact same object).

```ruby
x.equal?(y)
```

2. (8 pts) Write a regular expression that accepts the language “all binary strings ending in 0.” Using the algorithm described in class, reduce this RE to an NFA.

Regex: `(1|0)*0`

NFA:

![NFA Diagram]

3. (6 pts) Use the subset algorithm discussed in class to reduce the following NFA to a DFA. 
\( \Sigma = \{a, b\} \).
DFA: $R = \{\{S1, S3\}, \{S1, S2, S3\}\}$