# Regular Expressions

1. Write a Regular Expression for a string that:

* Starts with 10
* Has zero or more occurrences of any combination of 0 or 1 in the middle
* Ends with 01

Example strings are 1001, 100010101, 1011110101001

1. For the Regular Expression you’ve created above, draw the Finite State Machine representing it.
2. For the Finite State Machine shown below write the regular expression for it:

A pair of glasses

Description automatically generated with low confidence

1. What is a regular language?

EXTENSION:

1. Write a regular expression for strings that allow exactly 1 B in the string and any number of A’s and C’s before or after the single B.
2. Think about money values:

* They have a leading £ followed by one or more decimal digits which can be optionally followed by a . part and 2 decimal digits.
* The digits to the left of the decimal point (the pound part) may consist of a single zero digit, otherwise the sequence must not start with a zero digit.
* If there are more than three digits in the sequence of digits to the left of the decimal point, a comma must be used to separate each group of three digits (counting each group from the right) from digits to the left of each group.
* As examples: £23,838,012.99 and £0.76 and £304 are valid monetary values, while £2392.58 and 42.69 and £23.2 and £70,15 and £,654,887.11 and £092.58 are invalid monetary values.

Write a regular expression to represent this.