Exercise 1. Finding Patterns
Find a regular expression $p$ over the alphabet $\{0, 1\}$ such that the language defined by $p$ is the one given. Hint: For some of the exercises it may help not to think of a pattern that is somehow formed like the strings you want to capture, but to realize that as long as there’s one way of matching the pattern for such a string, that’s good enough.

(a) All words that begin with 0 and end with 1.
(b) All words that contain at least one 0 and at least one 1.
(c) All words that have length at least 2 and whose last but one symbol is 0.
(d) All words which contain the string 11, that is, two consecutive 1s.
(e) All words whose length is at least 3.
(f) All words that start with 0 and have odd length.
(g) All words for which every letter at an even position is 0.
(h) All words that contain at least two 0s and at most one 1.
(i) All words whose number of 0s is divisible by 3.
(j) All words that do not contain the string 10.

Exercise 2. Finding Automata
Design a DFA for each of the languages defined in the parts of Exercise 1.