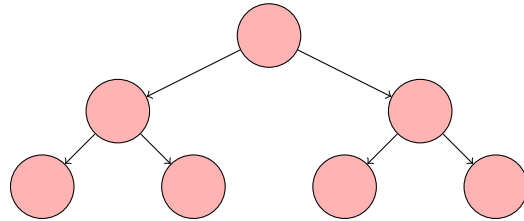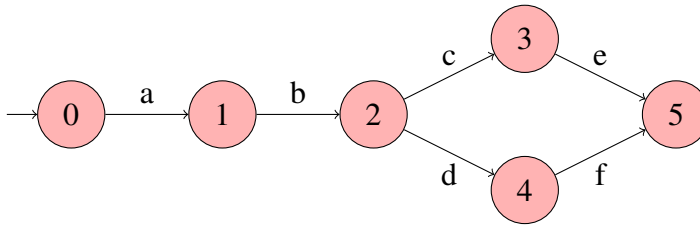1. Write a recursive method that for a given depth d chooses an integer in the range $1 - 2^d$ uniformly at random using **random.nextBoolean**. Hint: provide the method with an additional parameter.


```
public static int choose(int d, ) {




}
```
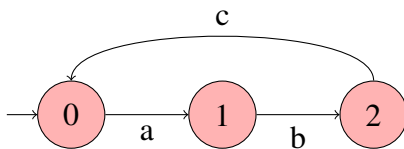
2. Consider the following model.

(a) Which is the initial state?

(b) Which are the final states?

(c) Which are the branching states?

(d) What is the language?

(e) What is the corresponding mini model?

3. Consider the following model.

(a) Which is the initial state?

(b) Which are the final states?

(c) Which are the branching states?

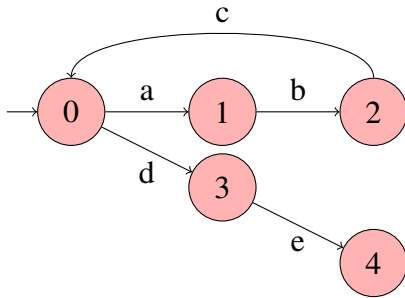(d) What is the language?

(e) What is the corresponding mini model?

4. Consider the following model.

(a) Which is the initial state?

(b) Which are the final states?

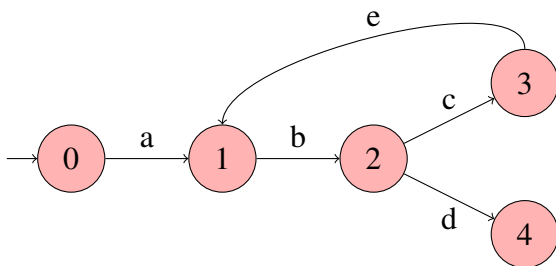(c) Which are the branching states?

(d) What is the language?

(e) What is the corresponding mini model?

5. Consider the following model.

(a) Which is the initial state?

(b) Which are the final states?

(c) Which are the branching states?

(d) What is the language?

(e) What is the corresponding mini model?