

8 Lecture - CS402

Important Subjective

1. **What is a Turing machine that accepts all strings?**

Answer: A Turing machine that accepts all strings is one that transitions to an accepting state for any input string.

What is a Turing machine that accepts none of the languages?

Answer: A Turing machine that accepts none of the languages is one that transitions to a rejecting state for any input string.

How can a Turing machine be designed to recognize strings that start with the letter 'b'?

Answer: A Turing machine that recognizes strings starting with 'b' can be designed to transition to an accepting state if it reads 'b' as the first character of the input string and to a rejecting state for all other characters.

How can a Turing machine be designed to recognize strings that do not end with the letter 'b'?

Answer: A Turing machine that recognizes strings not ending with 'b' can be designed to transition to an accepting state for all input strings except those that end with 'b'.

How can a Turing machine be designed to recognize strings that contain the substring 'aa'?

Answer: A Turing machine that recognizes strings containing 'aa' can be designed to transition to an accepting state if it reads 'aa' as a substring of the input string and to a rejecting state for all other characters.

How can a Turing machine be designed to recognize strings that contain either the substring 'aa' or 'bb'?

Answer: A Turing machine that recognizes strings containing 'aa' or 'bb' can be designed to transition to an accepting state if it reads either 'aa' or 'bb' as a substring of the input string and to a rejecting state for all other characters.

What is the difference between a Turing machine that accepts all strings and one that accepts none of the languages?

Answer: The difference between a Turing machine that accepts all strings and one that accepts none of the languages is that the former transitions to an accepting state for any input string, while the latter transitions to a rejecting state for any input string.

Can a Turing machine recognize a language that contains an infinite number of strings?

Answer: Yes, a Turing machine can recognize a language that contains an infinite number of strings, as long as the machine is able to process the input strings in a finite amount of time.

How can a Turing machine be designed to recognize strings that start with the letter 'a'?

Answer: A Turing machine that recognizes strings starting with 'a' can be designed to transition to an accepting state if it reads 'a' as the first character of the input string and to a rejecting state

for all other characters.

How can a Turing machine be designed to recognize strings that do not contain the substring 'ab'?

Answer: A Turing machine that recognizes strings not containing 'ab' can be designed to transition to an accepting state for all input strings except those that contain 'ab' as a substring.