

29 Lecture - CS402

Important Mcqs

1. Which of the following is an example of a decidable problem?

- A) The halting problem
- B) The traveling salesman problem
- C) The sorting problem
- D) The knapsack problem

Answer: C) The sorting problem

The complement of a decidable language is always:

- A) Decidable
- B) Undecidable
- C) Finite
- D) Regular

Answer: A) Decidable

Which of the following is an example of an undecidable problem?

- A) Checking whether a given number is prime
- B) Solving a system of linear equations
- C) Computing the square root of a number
- D) The halting problem

Answer: D) The halting problem

The Rice Theorem is used to:

- A) Prove the undecidability of problems
- B) Prove the decidability of problems
- C) Classify problems according to their complexity
- D) None of the above

Answer: A) Prove the undecidability of problems

Which of the following is an example of a language that is not decidable, but semi-decidable?

- A) The set of even numbers
- B) The set of prime numbers
- C) The set of palindromes
- D) The set of all Turing machines that halt on the empty input

Answer: D) The set of all Turing machines that halt on the empty input

The problem of deciding whether a given context-free grammar generates an infinite language is:

- A) Decidable
- B) Undecidable
- C) Semi-decidable
- D) Regular

Answer: B) Undecidable

Which of the following statements is true about decidable problems?

- A) They are always polynomial-time solvable

- B) They are always exponential-time solvable
- C) They can be solved in any amount of time
- D) None of the above

Answer: A) They are always polynomial-time solvable

The set of all regular languages is:

- A) Decidable
- B) Undecidable
- C) Semi-decidable
- D) None of the above

Answer: A) Decidable

Which of the following is an example of a problem that is not even semi-decidable?

- A) The halting problem
- B) The set of all Turing machines that halt on the empty input
- C) The set of all context-free grammars
- D) The set of all regular expressions

Answer: C) The set of all context-free grammars

Which of the following statements is true about semi-decidable problems?

- A) They are always decidable
- B) They are always undecidable
- C) They can be solved in any amount of time
- D) They can be solved in a finite amount of time, but may not always terminate

Answer: D) They can be solved in a finite amount of time, but may not always terminate