43 Lecture - CS402

Important Subjective

1. **What is decidability?**
   Answer: Decidability refers to the property of a problem or language being solvable by an algorithm or computer program.

   What is the difference between decidable and undecidable problems?
   Answer: A decidable problem is one that can be solved by an algorithm or computer program, while an undecidable problem is one that cannot be solved by any algorithm or computer program.

   What is the halting problem?
   Answer: The halting problem is a classic example of an undecidable problem that asks whether a given program will eventually halt or run forever.

   What is the Church-Turing thesis?
   Answer: The Church-Turing thesis states that any effectively computable function can be computed by a Turing machine or equivalent model of computation.

   Can all decision problems be solved by a computer program?
   Answer: No, not all decision problems can be solved by a computer program. Some problems are undecidable, which means that there is no algorithm that can solve them.

   What is the difference between decidable and semi-decidable problems?
   Answer: A decidable problem is one that can be solved by an algorithm, while a semi-decidable problem is one that can be partially solved by an algorithm.

   What is an example of a semi-decidable problem?
   Answer: The halting problem is an example of a semi-decidable problem.

   What is the significance of decidability in computer science?
   Answer: Decidability is an important concept in computer science as it helps us to understand the limits of what can and cannot be computed by an algorithm or computer program.

   Can a problem be undecidable in one model of computation but decidable in another?
   Answer: Yes, a problem can be undecidable in one model of computation but decidable in another.

   What is the relationship between the halting problem and the concept of decidability?
   Answer: The halting problem is an example of an undecidable problem, which demonstrates that not all problems can be solved by an algorithm or computer program, and hence, not all problems are decidable.