35 Lecture - CS402

Important Mcqs

1. What is null production in a context-free grammar?

A) A production rule that generates a null string

B) A production rule that generates a non-terminal symbol

C) A production rule that generates a terminal symbol

D) A production rule that generates a regular expression

Answer: A

What is the purpose of using null productions in a context-free grammar?

- A) To simplify the grammar by eliminating the need for additional productions
- B) To make the grammar more complex
- C) To increase the number of derivations for a given string
- D) To make the grammar more ambiguous

Answer: A

Which of the following is an example of a null production?

A) A ? aB B) B ? ? C) S ? AB D) S ? aSb

Answer: B

What is the effect of a null production on the parse tree of a string?

- A) It adds a new subtree to the parse tree
- B) It removes a subtree from the parse tree
- C) It does not affect the parse tree
- D) It can lead to multiple parse trees for a given string

Answer: B

Can a context-free grammar have multiple null productions?

A) Yes

B) No

Answer: A

What is the relationship between null productions and the language generated by a context-free grammar?

- A) Null productions do not affect the language generated by a grammar
- B) Null productions can change the language generated by a grammar
- C) Null productions can only be used in regular languages
- D) Null productions are used to generate infinite languages

Answer: B

Which of the following is an example of a context-free grammar with null productions? S ? AB | ?

```
A ? a
B ? bB | ?
A) { anbncm | n, m ? 0, 1 ? n ? m }
B) { anbncn | n ? 0 }
C) { anbmcn | n, m ? 0 }
D) { w ? { a, b }* | na(w) = nb(w) }
Answer: C
```

What is the difference between a null production and an empty string in a context-free grammar?

A) There is no difference between null production and empty string

B) Null production is a rule used in the derivation of a string, while an empty string is a string itself

C) An empty string is a non-terminal symbol, while null production is a terminal symbol

D) An empty string can only be used in regular grammars

Answer: B

How can ambiguity be introduced in a context-free grammar by using null productions?

- A) By adding multiple null productions for the same non-terminal symbol
- B) By adding null productions for all non-terminal symbols in the grammar
- C) By using null productions in the production rules of a regular language
- D) By removing null productions from the grammar

Answer: A

Which of the following statements is true about the Chomsky Normal Form (CNF) of a context-free grammar?

A) The CNF does not allow null productions

- B) The CNF allows only null productions
- C) The CNF allows both null and unit productions
- D) The CNF only allows unit productions

Answer: A