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Vadodara, Gujarat

NAAC GRADE A++

Information and Communication Technology

Semantic error recovery

Study Guide

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1.1 Semantic error

These errors are detected during semantic analysis phase. Typical semantic errors are

- Incompatible type of operands
- Undeclared variables
- Not matching of actual arguments with formal one"

Example:

```
int a[10], b;
  .......
  .......
  a = b;
```

It generates a semantic error because of an incompatible type of a and b.

1.2 Semantic error Recovery

"If error "Undeclared Identifier" is encountered then, to recover from this a symbol table entry for corresponding identifier is made.
If data types of two operands are incompatible then, automatic type conversion is done by the compiler."

Summary of Key Concepts

Semantic errors occur during semantic analysis when statements are meaningfully incorrect.

Examples include:

Incompatible operand types

Undeclared variables

Mismatch in function argument types or count

Example: a = b; where a is an array and b is an integer → type mismatch.

Recovery Techniques:

If a variable is undeclared, compiler automatically adds a placeholder entry in the symbol table.

If types don't match, compiler may perform automatic type conversion (type coercion) when possible.

References:

1. **Aho, A. V., Lam, M. S., Sethi, R., & Ullman, J. D. (2007).** *Compilers: Principles, Techniques, and Tools* (2nd Edition). Pearson Education. *(Also known as "The Dragon Book")*
2. **Holub, A. I. (1990).** *Compiler Design in C.* Prentice-Hall of India.

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