Chapt...

What is CASE?

"Case" is the discipline of computer based assistance for development and maintenance of software. CASE tools are available for different phases of SDLC.

Need of CASE

1. The size of projects was becoming unwieldy as more and more organization undertook automation. It was becoming necessary to automate the development process itself.
2. Software engineering procedures requires systematization of the development process and a lot of documentation, inetgration of project management with analysis, design, testing, implementation etc. only as automated tool could handle the complications and the load.
3. In software development user requirements became important, so these had to be tracked very carefully and changes in requirements applied to the development process meticulously. Tracking is meticulous and easy when recorded and documented well. Nothing other than an automated tool could achieve this level of perfection.
4. Software engineering supports the principles of reusability, flexibility, maintainability. If the system data is not documented well how would you achieve this?
5. Use of CASE tool also speeds up the software development process.

What Case Tool Can do?

(a) Graphic Tool

- Data flow Diagram
- Flow Chart
- Entity Relationship Diagram
- Structure Charts
- State Transition Diagrams

(b) Dictionary Tools

- Contents of Files
- Inputs and Outputs
- Properties of Data Elements
- Logic Rules for Process

(c) Prototyping Tools

- External design of Inputs
- Screens
- Froms
- Outputs

(d) Quality Checking Tools

- Dictionary Specification
- Correctness of DFD
- Correctness of ERD
- Consistency Errors
- Completeness Errors

(e) Code Generating Tools

(f) Cost Benefit Analysis Tools

(g) Project Management Tools

(h) Documentation Assemblers

— Technical and Non-Technical

— With Interfaces to Popular Word Processing

(i) Test Data Generates

(j) Path Coverage Analyzers

✔ Case Technology

Computer aided software engineering can be as simple as a single tool that supports as a specific software engineering activity or as complex as a complete environmnet that encompasses tools, a database, people, hardware, a network, operating systems and other components.

CASE technology has come a long way since its invention in the early 1980's when all it had to offer was a set, a stand alone drawing tools. Today a wide range of CASE tools is available in the market. Different types of CASE tools address different areas of software engineering. CASE tool technology can be split into 3 levels. These levels are :

(a) Production Process Support Technology

(b) Process Management Technology

(c) Meta Case Technology

(a) Production – Process Support Technology : This range of tools supports process activities such as specification, design, implementation and testing.

(b) Process Management Technology : This range of tools supports process modeling and process management. This range of tools will interact with 'production-process' support tools for specific purpose process activities.

Characteristics of CASE Tools

CASE tools have the following characteristics.

(a) A graphic interface to draw diagrams, charts, models etc.

(b) An interface repository, a data dictionary for efficient information management selection, usage, application and storage.

(c) Common user interface for integration of multiple tools used in various phases of SDLC.

(d) Automatic code generator.

(e) Automatic testing tools.

✔ Classification of CASE Tools

CASE tools can be divided or classified by function. CASE tools are used to automate a particular activity in the software development process. There are a number of activities in a software development process, such as information gathering process modeling, project planning, risk analysis, documentation, code generation, interfacing etc.

Various types of CASE tools that are based on function criteria are as follows :

1. Process Modeling and Management Tools : If an organization works to improve a business process, it must first understand it. Process modeling tools are used to represents the key elements of a process so that it can be better understood.

2. Project Planning Tools : Tools in this category focus on two primary areas *i.e.,* software project effort and project scheduling. Estimating tools compute estimated effort, project duration and recommended manpower. Project scheduling tools enables the manager to define all project tasks, create a task network usually using graphical input, represent task interdependencies etc.

3. Risk Analysis Tools : Identify potential risks and developing a plan to migrate, monitor and manage them is of paramount importance in large projects.

4. Project Management Tools : The project schedule and project plan must be tracked and monitored on a continuous basis. Tools in this category are often extensions to project planning tools.

5. Requirement Tracing Tools : When large systems are developed, the delivered system often fails to meet customer specified requirements. The objectives of requirement tracing tools is to provide a systematic approach to the isolation of requirements, beginning, with the customer request for proposal or specification.

6. Documentation Tools : Document productions and desktop publishing tools support nearly every aspect of software engineering and represent a substantial 'leverage' opportunity for all software development.

7. System Software Tools : CASE is a workstation technology. Therefore, the CASE environment must accomodate high quality network system software, electronic mail and other communication capabilities.

8. Quality Assurance Tools : The majority of CASE tools that claim to focus on quality assurance are actually matrics tools that audit source code to determine compliance with language standards.

9. Software Configuration Management Tools : Software configuration management lies at the kernel of every CASE environment. Tools can assist in all five SCM taks such as :