

Programming Environments

T1 Chapter 1

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Text Book: T1. T. W. Pratt, M. V. Zelkowitz, "Programming Languages Design and Implementation", 4th Ed, PHI, ISBN 81-203-2035-2.

Programming Environments

T1 Chapter 1

- program can be created and tested
- a collection of support tools that are used in software development
- Effects on Language Design
- Environment Framework
- Job Control and Process Languages

Effect on Language Design

The programming environment influence on language in two major areas namely

1. Separate Compilation
2. Testing / Debugging

1. Separate Compilation

- There are varying no. of programmers working on design, code and test the parts of programs
- This require the language to be structured so that individual subprograms or other parts can be separately compiled and execute without requirement of other part
- It is difficult b'coz compiling one subprogram may need some **information** which is present in some other subprogram
- **Shared data** is also used in the program due to which separate compilation is not possible

1. Separate Compilation (cont..)

To solve this prob. Some lang. have adopted certain following features that aid separate compilation:

- **Extern:** to indicate that particular data is used from other subprogram
- **Scoping rules :** uses to hide names. One subprogram can be contained within another subprogram so that the name of the outer subprograms are known to separately compiled subprogram
- **Inheritance:** to use the shared data eg. OOP

2. Testing / Debugging

Many lang. contains some features that help in testing and debugging like

- **Breakpoint Feature**: When the breakpoint is reached, the execution of the program is interrupted and control is given to the programmer.
- **Execution Trace Feature**: particular variable or statement can be tagged for tracing (PROLOG, LISP)
- **Assertions**: It's conditional expression which is inserted as a separate statement in a program

```
System.out.println(" Enter your age");  
int age = reader.nextInt();  
Assertion.assert(age<18, " you are not allowed to vote);
```

Environment Framework

- The collection of Infrastructure services to manage the development of a program
- Services are data repository, GUI, security and communication
- Eg. System like visual basic and Microsoft visual studio provide for libraries of service for C++,Java, BASIC prog. to build window-based applications

Job Control and Process Languages

- Related to environment frameworks is the concept of job control
- Rather than have operator wait for each step to successfully finish, each program would produce a return code, and command for the next step could test that return code and decide whether to execute.
- Process or scripting language conveying information back and forth between a user at a web browser and a web server

Thank You