

Lecture: 10
Rapid Prototyping Techniques
&
User Interface Prototyping

Various techniques may be used for rapid development:

- **Dynamic high-level language development**
- **Database Programming**
- **Component and application assembly**

These are not exclusive techniques and they are often used together. Visual programming is an inherent part of most prototype development systems.

Dynamic High Level Language Development:

Dynamic HLL are programming languages that simplify program development since they reduce problems of storage allocation and management. e.g. JAVA, PROLOG, Python etc.

- These are the languages which include powerful data management.
- They need a large run time support system, so normally are not used for large system development.
- Some languages have IDE (integrated development) whose facilities may be used in the prototype.

DHLL can be selected for prototyping based on:

- Application Domain
- Types of User Interface
- Environment Support

Database Programming Languages:

These are domain specific languages for business systems based around a database management system. These normally include a database query language, a screen generator, a report generator and a spreadsheet.

The language along with environment is sometimes known as a fourth-generation language (4GL). These are cost-effective for small to medium sized business systems.

Component and application assembly:

Prototypes can be created quickly from a set of reusable components plus some mechanism to glue these components together. The composition mechanism

must include control facilities and a mechanism for component communication.

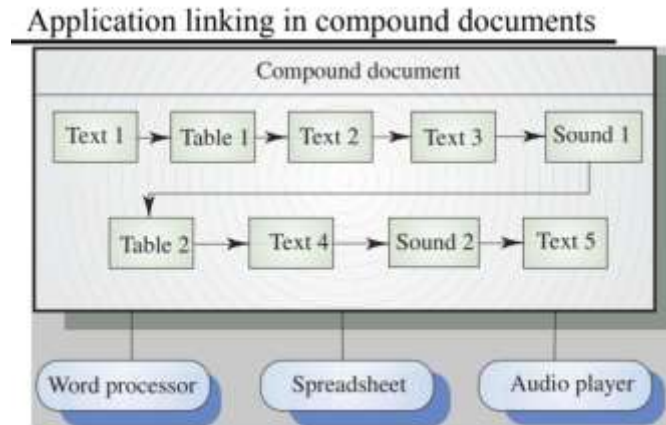
- **Application Level Development:**

- Entire application systems are integrated with the prototype so that their functionality can be shared e.g. if text preparation is required, a standard word processor can be used.

- **Component Level Development:**

- Individual components are integrated within a standard framework to implement the system.

For some applications, a prototype can be created by developing a compound document. This is a document with active elements (such as a spreadsheet) that allow user computations. Each active element has an associated application which is invoked when that element is selected.



Scripting languages such as Visual Basic support visual programming may be used where the prototype is developed by creating a user interface from standard items and associating components with these items.

User Interface Prototyping:

User interface is the front-end application view to which user interacts in order to use the software. The software becomes more popular if its user interface is:

- Attractive
- Simple to use
- Responsive in short time
- Clear to understand
- Consistent on all interface screens

UI development consumes an increasing part of overall system development costs. User Interface generators may be used to draw the interface and simulate its functionality with components associated with the interface entities. Web interfaces may be prototyped using a web site editor.