INTRODUCTION to COMPUTER AND ICT

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For BS Computer Science, BS (IT), BS Geology, BS Mathematics, BS Commerce, BS Statistics

MANAGEMENT Information System 1st Edition Dr. Rahman Ali

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MANAGEMENT Information System

1st Edition

In accordance with approved curriculum for BS Commerce, Master of Commerce, BBA and MBA program of the HEC and University of Peshawar.

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Chapter 1:

Information System in Business

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Outlines

- ✓The Systems Development Life Cycle.
  - Importance of SDLC
- ✓Phases of SDLC
  - System Planning
  - Feasibility Study
  - System Analysis.
  - Requirements Engineering
  - System Design (algorithm, flowchart and pseudo code)
  - Coding
  - Testing/verification
  - Deployment/implementation
  - Maintenance/support

Developing Information system but Why ?

- Lets start our discussion with the following illustration.
- Illustration
  - Consider the following scenario, a shopping store has no automated system on cashier counter. All the items from the customer basket are need to be written on the paper receipt by hand and amount is calculated manually using calculator.
- What you think about ? What is the problem ?

Developing Information system but Why ?

- Lets Take another Example.
- Example
  - Consider a shopping store that has an automated software at the cashier counter, when customer bring their basket on there , machine automatically read the items price, generate the receipt and price record etc. are manage in the system.
- Compare the system with the previous one ?

Developing information system

- Information system is a solution to a business real world problem.
- It solve the problem by automating the process.
- How to develop
  - To develop an information system, a development methodology shall be applied.
  - Development methodology shall follow some guidelines.
- Software development life cycle (SDLC)
  - is a set of guidelines that help the developers to develop an effective information system.

System Development Life Cycle (SDLC)

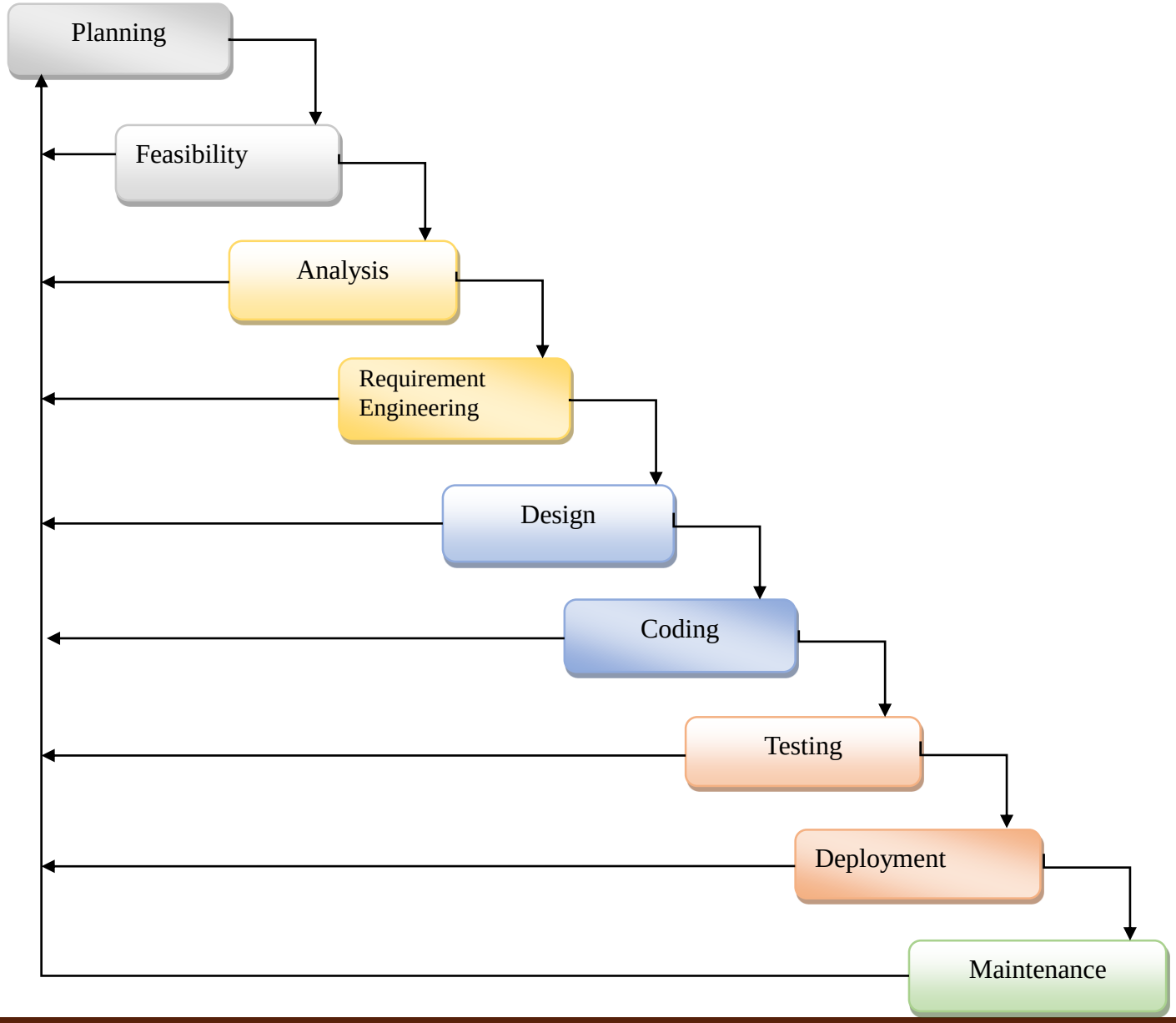
SDLC

- is a conceptual model used in project management to build an effective system for an organization.
- It is a step by step process.
- also known as application development or information system development process.

Importance

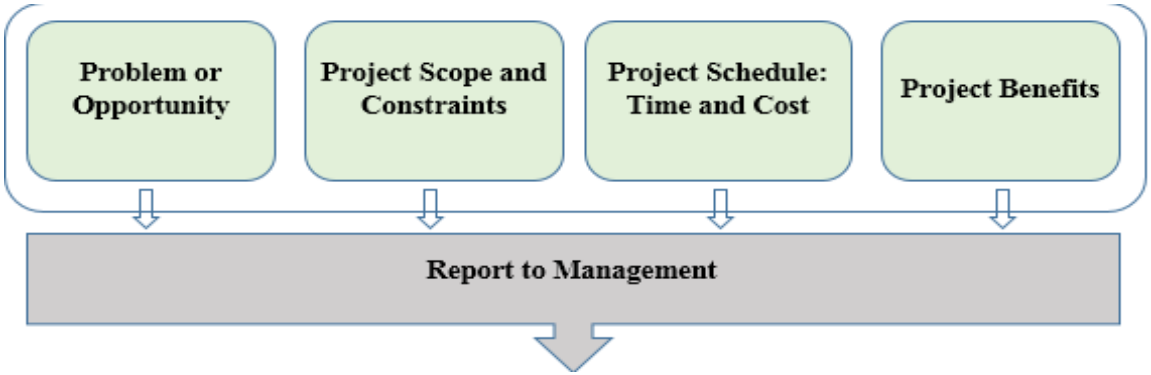
- it breaks down the entire life cycle of software development into phases thus making it easier
- easier for programmers to work concurrently on each phase.
- provides a rough time estimate of the availability of the system
- delivers quality software
- provides the basic framework for the developing of quality software.
- helps project managers to establish a project management structure
- clearly defines and assigns the roles and responsibilities of all the involved parties.
- ensures that the requirements for the development of the software system

Phases of SDLC



Planning Phase

- In this phase, it is determined, what the system needs to do for the organization.
- Planning phase tries to find answers for the questions such as:
  - What do we need this system for?
  - What the new software system will do for the organization?
  - How this new software system will be developed?
- Activities of the planning phase



Feasibality

- **It includes the following types of study before starting the project**

Technical Feasibility

- *Refers to Technical Resources Needed for development of the project.*

Economic Feasibility

- *Refers to the cost of the project.*

Schedule Feasibility

- *It means that the project can be implemented in an acceptable time frame or not ?*

Operational Feasibility

- *After development, it has to be use effectively , does organization has staff to operate this system?*

Organizational and cultural feasibility

- *company has its own culture and the new system must fit into the culture of that organization.*

Resources:

- *Checks team members and their skills along with equipements etc*

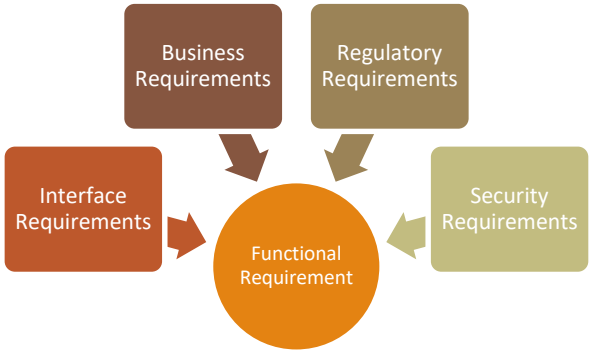
Analysis phase

- looks how the existing system is working.
- The following questions are considered during the analysis.
  - Can the proposed software be developed with the available resources and budget?
  - Will this system significantly improve the organization?
  - Does the existing system even need to be replaced?
- Activities of the analysis phase
  - Gather information to learn problem domain
  - Define system requirements
  - Prioritize requirements
  - Build prototypes for feasibility and discovery of requirements
  - Generate and evaluate alternative solutions for the problem in hand
  - Review recommendations with top level management to decide about the project

Requirements Engineering

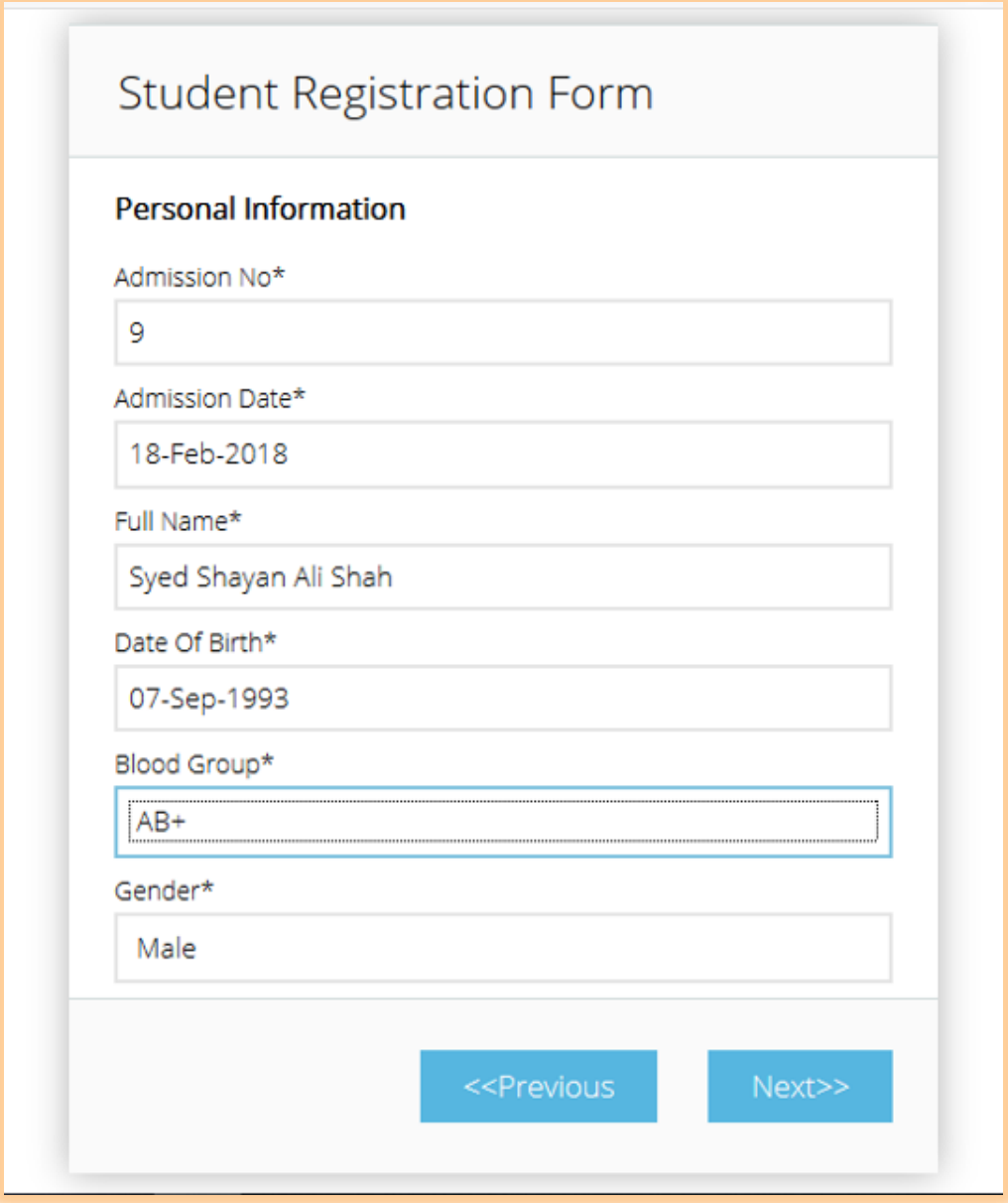
Requirement engineering consists of the following steps:

- Requirement gathering: collects requirements, which are of two types.
  - Functional requirements
    - Describe a function of a software system or its component
    - **Examples**: Interface, Business, Compliance, & security etc.
  - Non-Functional Requirements
    - Specify criteria for the judgment of the operations of a system.
    - Describes how well the system performs its duties.
    - These are often called qualities of a system.
    - **Examples**: Accessibility Requirements, Accuracy Requirements, Backup and Recovery Requirements



- Requirement validation
  - Examines the requirements to certify that they meet the intentions of the stakeholders,
- Requirements management
  - Ensures that the software continues to meet expectations of the acquirer user.
  - Address new requirements and isssues.

Interface Requirement (Example)



Design Phase

- The system is designed to satisfy the functional requirements
- Considerations for minimizing future risks
  - Identifying potential risks and defining mitigating design features
  - Performing a security risk assessment
  - Developing a conversion plan to migrate current data to the new system
  - Determining the operating environment
  - Defining major subsystems and their inputs and outputs
  - Allocating processes to resources
- Architectures used are:
  - Algorithms
  - Flow Chart
  - Pseudo code

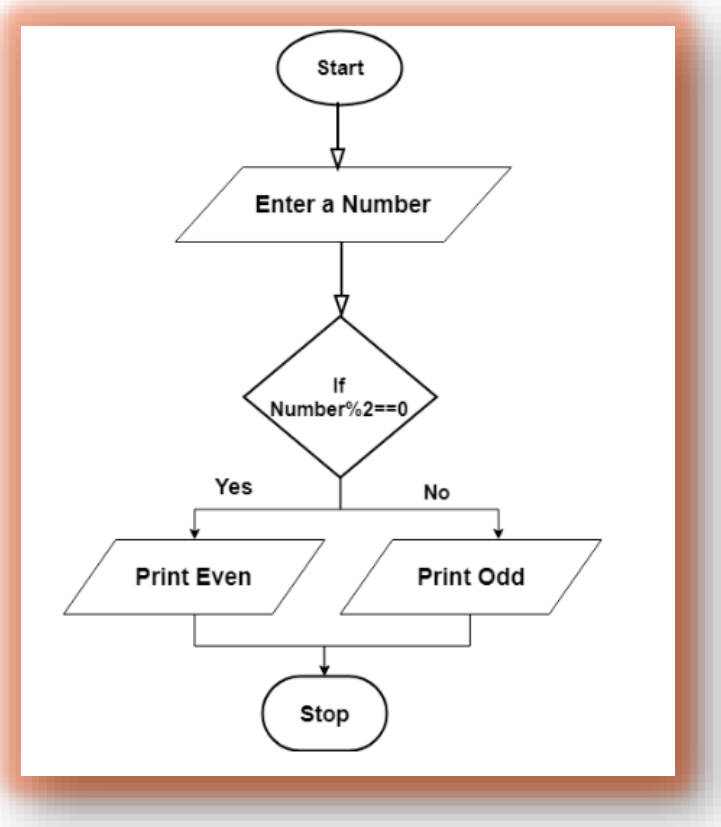
Algorithm

- Algorithm is a step by step process to solve a problem.
- The steps should be finite.
- Following is an algorithm that is used to add "N" numbers together and display the result.

1	sum ← 0;
2	x ← 1;
3	while x ≤ N do
4	sum ←sum + x;
5	x ←x + 1;
6	end while;
7	print sum;

Flowcharts

- Pictorial representation of an Algorithm
- It shows the flow of information in a process
- Notations Used
  - Oval: Start & Exit
  - Parallelogram: I/O
  - Diamond: Condition
  - Arrows: Flow of Information
- Example
  - Displaying whether an integer is even or odd



Pseudo code

- *Pseudo code* is an outline of a program, written in a form that can easily be converted into real programming statements.
- Pseudo code neither is compiled nor executed, and there is no specific formatting and syntax rules for it.
- Scenario
  - pseudo code for the scenario to display the result of a student as “Passed” if the percentage is greater than or equal to 60% and “Failed” otherwise.

1	**If percentage is greater than or equal to 60%**
2	Print "Passed"
3	else
4	Print "Failed"

Coding

- **Definition**
  - Coding is the process of designing, writing, testing, debugging, and maintaining the source code of computer programs.
  - This source code is written in programming languages.
- **Examples of languages**
  - C++, Java, C#.Net, and VB.Net etc.
- **Scenario**
  - C++ Code for the flowchart above is

```
1   /* program to declare a numbers is even or odd*/
2   #include <iostream.h>
3   #include<conio.h>
4   int main ()
5   {
6   int N ;
7   cout<< “Enter value for N”<<endl;
8   cin>>N ;
9   If(N%2==0)
10  cout<< “The Number is ODD.”;
11  Else
12  cout<<“The Number is EVEN.”;
13  getch();
14  return 0;
15  }
```

Testing/Verification

- **Definition**
  - The execution of a program to find its errors is called testing.
- **Testing software is actually operating the software under controlled conditions, to:**
  - Verify that it behaves “as specified”.
    - Verification is the process of checking the items for consistency
  - To detect errors.
  - To validate that what has been specified is what the user actually wanted.
    - Validation looks at the system correctness

Deployment or Implementation

- **Software deployment is a set of activities that are used to make the software system available to the users for use.**
- **Also called implementation.**
- **The main activities Includes**
  - Programming:
  - Release of the developed software
  - Installation and activation of the equipment
  - Training
  - Conversion
    - The process of changing from the old system to the new one is called conversion.

Maintenance and support

- **Definition**
  - Keeping a system in its proper working condition is called maintenance
- **The system is monitored continually for performance in accordance with user requirements and needed system modifications are incorporated.**
- **When modifications are identified, the system may reenter the planning phase.**
- **This process continues until a complete solution is provided to the customer.**
- **Maintenance can be either**
  - repairing or modification or
  - some enhancement in the existing system.

Practical Project

- **Project-1:**
  - The student should develop an **Inventory Information System** for a Business
  - Stock
  - Inflow/Purchase: Purchase order -- Payments
  - Outflow/Sale: Sale Order – Receipts
  - etc
- **Project-2:**
  - The student should develop an **Examination Information System** for a School
  - Students
  - Subjects
  - Marks
  - Etc.
- **Tool to be Used**
  - MS Access: Database, Tables, Forms, Queries, Reports.

References

- Ali, R. & Ali, A. (2018). Chapter 2: Solving Business Problems with Information System. *Management Information System – 1st Edition* (pp. 14-34). Mahla Jangi, Qissa Khawani, Peshawar, Pakistan: Al-ilum Publications.

Thanks!

Any Questions

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