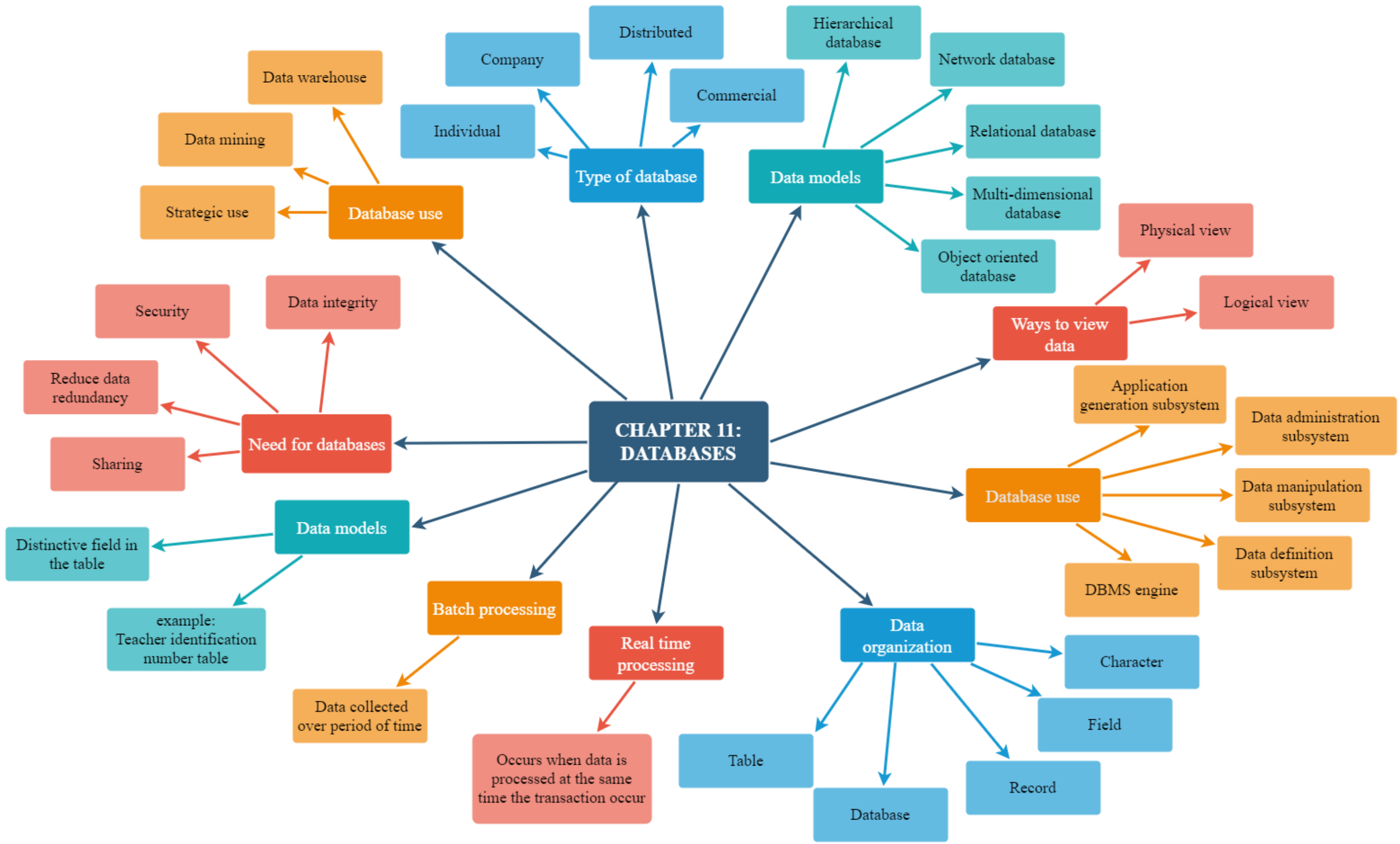
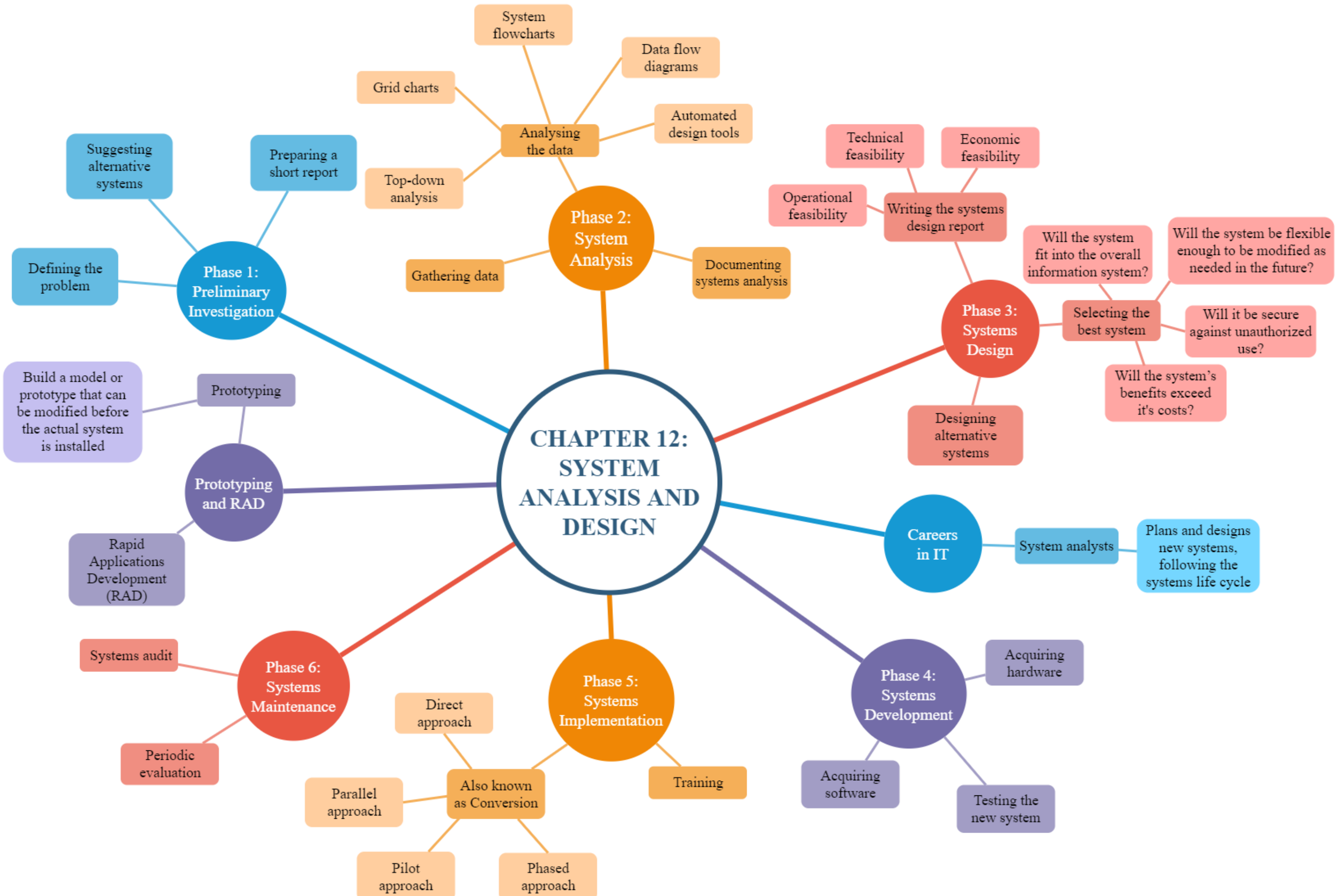

CHAPTER 11: DATABASES
Type of database
Company
Distributed
Commercial
Individual
Data models
Hierarchical database
Network database
Relational database
Multi-dimensional database
Object oriented database
Database use
Data warehouse
Data mining
Strategic use
Need for databases
Security
Data integrity
Reduce data redundancy
Sharing
Ways to view data
Physical view
Logical view
Database use
Application generation subsystem
Data administration subsystem
Data manipulation subsystem
Data definition subsystem
DBMS engine
Data models
Distinctive field in the table
example: Teacher identification number table
Batch processing
Data collected over period of time
Real time processing
Occurs when data is processed at the same time the transaction occur
Data organization
Character
Field
Record
Database
Table


CHAPTER 12: SYSTEM ANALYSIS AND DESIGN
Phase 1: Preliminary Investigation
Defining the problem
Suggesting alternative systems
Preparing a short report
Phase 2: System Analysis
Gathering data
Analysing the data
Grid charts
System flowcharts
Data flow diagrams
Automated design tools
Top-down analysis
Documenting systems analysis
Phase 3: Systems Design
Designing alternative systems
Writing the systems design report
Technical feasibility
Economic feasibility
Operational feasibility
Selecting the best system
Will the system fit into the overall information system?
Will the system be flexible enough to be modified as needed in the future?
Will it be secure against unauthorized use?
Will the system's benefits exceed it's costs?
Careers in IT
System analysts
Plans and designs new systems, following the systems life cycle
Phase 4: Systems Development
Acquiring hardware
Acquiring software
Testing the new system
Phase 5: Systems Implementation
Training
Also known as Conversion
Direct approach
Parallel approach
Pilot approach
Phased approach
Phase 6: Systems Maintenance
Systems audit
Periodic evaluation
Prototyping and RAD
Prototyping
Build a model or prototype that can be modified before the actual system is installed
Rapid Applications Development (RAD)

Chapter 13: Programming and Languages

- **Program maintenance**
  - A collection of instructions that can be executed by a computer to perform a specific task.
- **Program maintenance**
  - A list of instructions for the computer to follow to process data.

Program specification

- Objective
- Outputs
- Inputs
- Process
- Document

Program design

- Plan a solution using structured programming techniques
- Top-down design
  - Identify the program modules required
- Pseudocode
  - Provide an outline of the logic and summarize the program you will write
- Flowcharts
  - Graphically depict the sequence of steps required
- Logic structures
  - Concatenation structure
    Selection structure
    Repetition structure

Research and Development

- Program code
- Writing the program or coding
  - Content-markup languages
  - Programming languages

Program test

- Debugging to test code and eliminate errors
- Syntax errors
- Logic errors
- Testing process
  - · Desk check
  - · Manual Test
  - · Translate
  - · Sample Data
  - · Beta Test

Program Documentation

- It is a written descriptions about a program
- It's important for people who will use and support the program
  - Users
  - Operators
  - Programmers
- Process:
  - · Review
  - · Finalize
  - · Distribute

Program maintenance

- Ensures program:
  - · Error-free
  - · Effective
  - · Efficient
- Activity categories
  - · Operations
  - · Changing needs

CASE Tools

- Stands for: Computer-aided software engineering
- Automates portions of the development process
  - Program design
  - Coding
  - Testing

OOP Software Development

- OOP: Object-oriented programming
- Focuses less on procedures, more on relationships between objects which contain both the data and the processing operations needed to perform a task.

Generation of Programming Languages

- 1st Gen: Machine languages
- 2nd Gen: Assembly languages
- 3rd Gen: High level procedural languages (3GLs)
- 4th Gen: Task-oriented languages (4GLs)
- 5th Gen: Problem and Constraint languages (5GL)