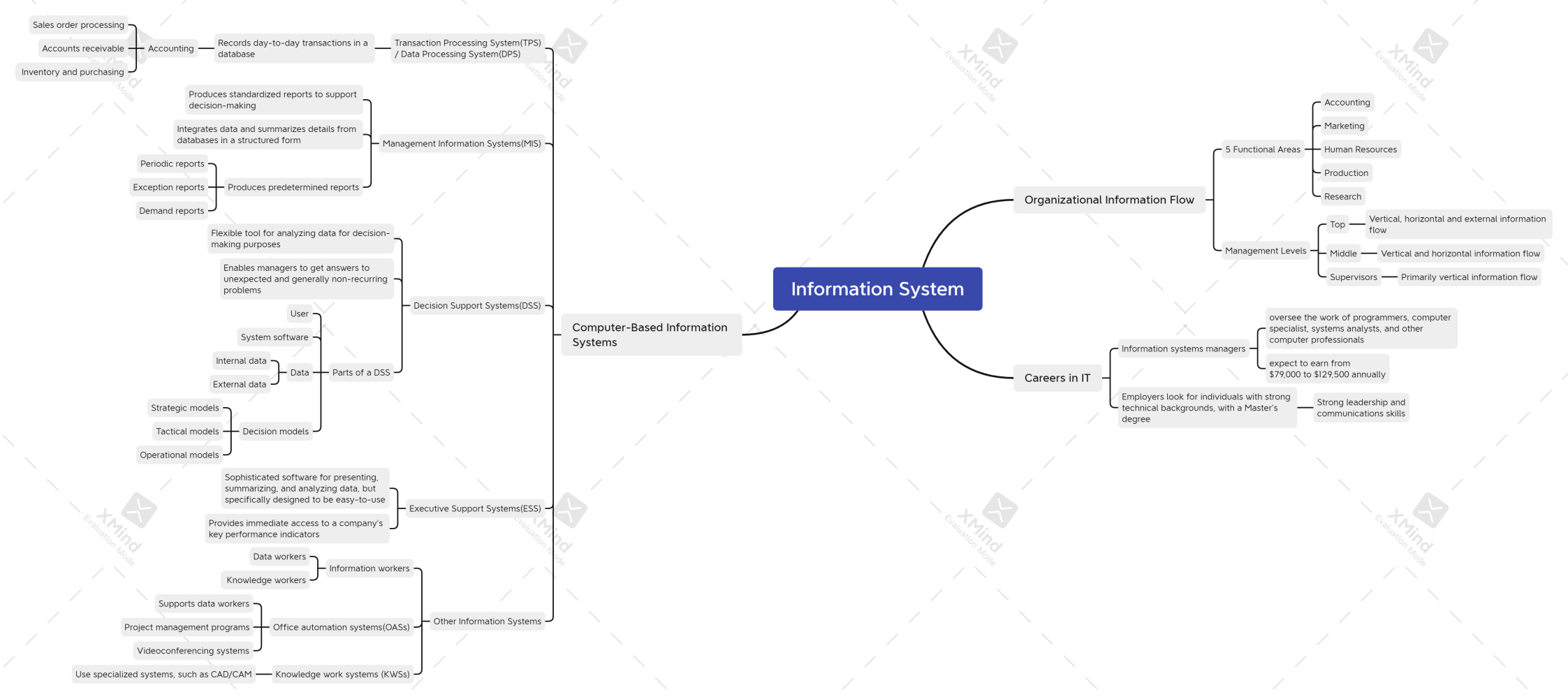

Information System
Computer-Based Information Systems
Transaction Processing System(TPS) / Data Processing System(DPS)
Records day-to-day transactions in a database
Accounting
Sales order processing
Accounts receivable
Inventory and purchasing
Management Information Systems(MIS)
Produces standardized reports to support decision-making
Integrates data and summarizes details from databases in a structured form
Produces predetermined reports
Periodic reports
Exception reports
Demand reports
Decision Support Systems(DSS)
Flexible tool for analyzing data for decision-making purposes
Enables managers to get answers to unexpected and generally non-recurring problems
Parts of a DSS
User
System software
Data
Internal data
External data
Decision models
Strategic models
Tactical models
Operational models
Executive Support Systems(ESS)
Sophisticated software for presenting, summarizing, and analyzing data, but specifically designed to be easy-to-use
Provides immediate access to a company's key performance indicators
Other Information Systems
Information workers
Data workers
Knowledge workers
Office automation systems(OASs)
Supports data workers
Project management programs
Videoconferencing systems
Knowledge work systems (KWSs)
Use specialized systems, such as CAD/CAM
Organizational Information Flow
5 Functional Areas
Accounting
Marketing
Human Resources
Production
Research
Management Levels
Top
Vertical, horizontal and external information flow
Middle
Vertical and horizontal information flow
Supervisors
Primarily vertical information flow
Careers in IT
Information systems managers
oversee the work of programmers, computer specialist, systems analysts, and other computer professionals
expect to earn from $79,000 to $129,500 annually
Employers look for individuals with strong technical backgrounds, with a Master's degree
Strong leadership and communications skills

Chapter 11: Database

Data

- Facts or observations about people, places, things and events.
- Audio, music, photographs, and video.

Ways to view data :

- Physical view: focus on the actual format and location of the data.
- Logical view: focus on the meaning, content, and context of the data.

Careers in IT

Database administrators

- Determine the most efficient ways to organize and access a company's data.
- Responsible for database security and backing up the system.

Employers look for

- Bachelors degree in Computer Science.
- Technical experience.

Database administrators can expect to earn $48,500 to $85,000 annually

Database Uses and Issues

Strategiv uses

- Special type of database called data warehouse.
- Data mining is used to search databases for information and patterns.

Security

- Databases are valuable.
- Protection necessary.

Types of Databases

- Individual (personal computer database): Integrated files used by just one person.
- Company or shared: Common operational or commonly used files shared in an organization.
- Distributed: Database spread geographically and accessed using database server.
- Commercial: Information utilities or data banks available to users on a wide range of topics

DBMS Structure

- Hierarchical database
- Network database
- Relational database
- Multidimensional database
- Object-oriented database

Data organization

- Character: A character is the most basic logical data element. It is a single letter, number, or special character (punctuation mark/symbol).
- Field: A data field represents an attribute (description/characteristic) of some entity (person/place/thing/object).
- Record: A record is a collection of related fields. A record represents a collection of attributes that describe an entity.
- Table: A table is a collection of related records. It includes records for the entities.
- Database: A database is an integrated collection of logically related tables.
- Key field: Unique identifier also known as primary key

  Common examples:
  - Social Security Number
  - Student Identification Numbers
  - Employee Identification Numbers
  - Part Numbers
  - Inventory Numbers
- Processing
  - Batch processing: Data is collected over a period of time and the processing happens later all at one time.
  - Real-time processing: Also known as online processing because it happens immediately during the transaction

Database

-Collection of integrated data (logically related files and records).
- Databases address data redundancy and data integrity.

Need for Database

- Sharing
- Security
- Less data redundancy
- Data integrity

Data Management

- DBMS engine: Provides a bridge between the logical view of data and the physical view of the data.
- Data definition subsystem
  - Data disctionary
  - Schema
- Data manipulation subsystem
  - Query-by-example
  - Structured query language (SQL)
- Application generation subsystem: Provides tools to create data entry forms and specialized programming languages that interface with common used programming languages.
- Data administration subsystem
  - Database Administrators (DBAs)
  - Processing rights

System Analysis And Design

Systems Life Cycle

- Preliminary Investigation
  - Problem
  - Alternatives
  - Report
- Systems Analysis
  - Gather
  - Analyze
    - Checklists
    - Top down analysis method
    - Grid charts
    - Decision tables
    - System flowcharts
    - Data flow diagrams
    - Automated design tools
      - Computer aided software engineering tools (CASE)
  - Report
- System Design
  - Evaluate systems
    - economic feasibility
    - technical feasibility
    - operational feasibility
  - Alternatives
  - Best
  - Report
- System Development
  - Software
  - Hardware
  - Test
- System Implementation
  - Also known as conversion
  - Converting from the old system to the new one
  - Training people to use the new system
  - Types of conversion approaches include:
    - Direct
    - Parallel
    - Pilot
    - Phased
- Systems maintenance
  - systems audit
  - periodic evaluation

A Look to the Future

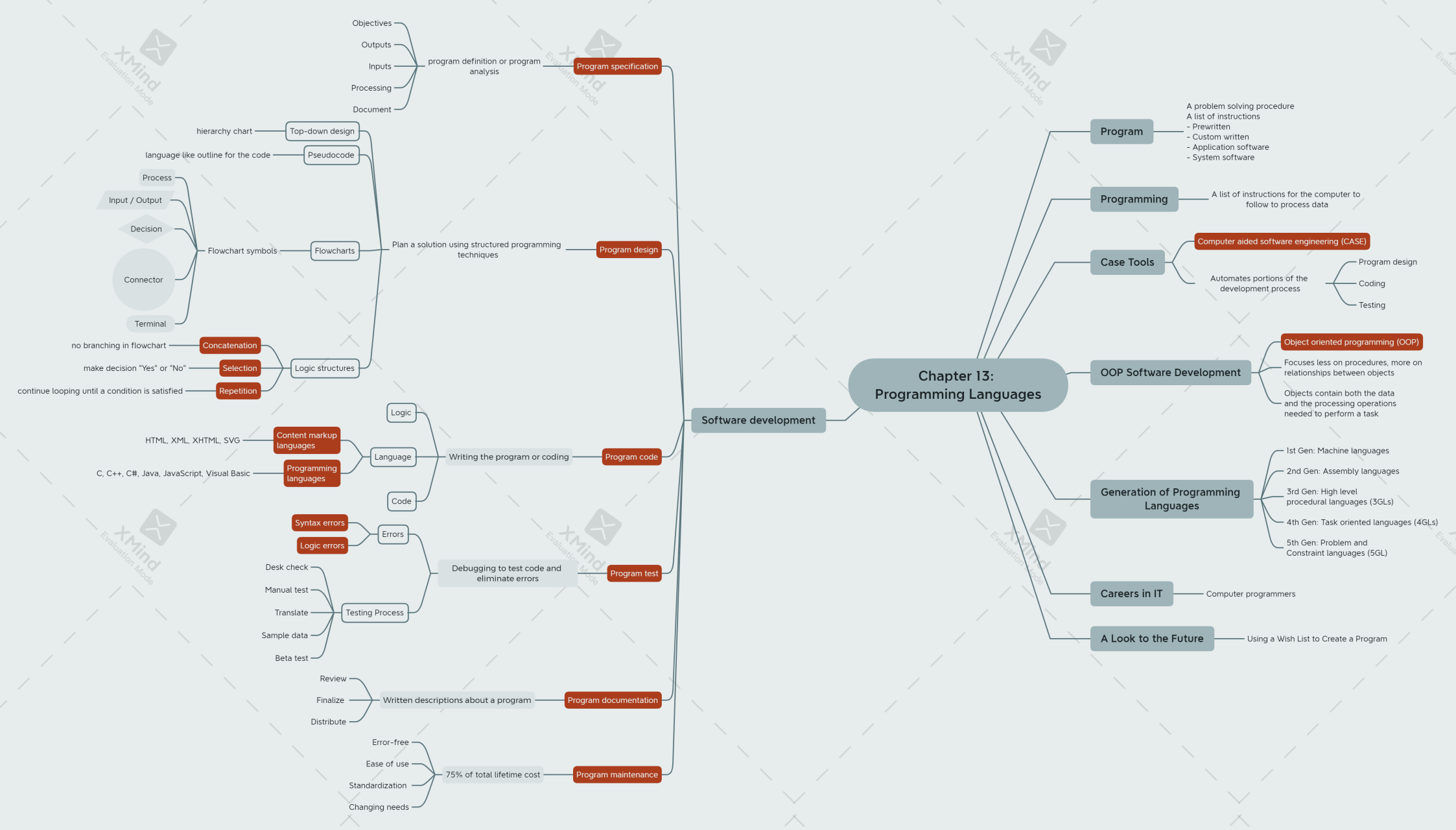
- The Challenge of Keeping Pace
  - To stay competitive with today's fast business pace
  - new technologies must be incorporated
  - Increased use of RAD and prototyping
  - Increased use of outside consulting

Careers in IT

- systems analyst
  - plans and designs new systems
  - following the systems life cycle
  - Requires
    - Bachelor's degree in Computer Science or Information Systems
    - technical experience
  - Can expect to earn an annual salary of $54,500 to $87,500

Prototyping and Rapid Applications Development

- Alternatives to the systems life cycle
  - may be used if the system is not feasible
- Prototyping is building a model
- Rapid applications development (RAD)


Chapter 13: Programming Languages
Program
A problem solving procedure
A list of instructions
- Prewritten
- Custom written
- Application software
- System software
Programming
A list of instructions for the computer to follow to process data
Case Tools
Computer aided software engineering (CASE)
Automates portions of the development process
Program design
Coding
Testing
OOP Software Development
Object oriented programming (OOP)
Focuses less on procedures, more on relationships between objects
Objects 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)
Careers in IT
Computer programmers
A Look to the Future
Using a Wish List to Create a Program
Software development
Program specification
program definition or program analysis
Objectives
Outputs
Inputs
Processing
Document
Program design
Plan a solution using structured programming techniques
Top-down design
hierarchy chart
Pseudocode
language like outline for the code
Flowcharts
Flowchart symbols
Process
Input / Output
Decision
Connector
Terminal
Logic structures
Concatenation
no branching in flowchart
Selection
make decision "Yes" or "No"
Repetition
continue looping until a condition is satisfied
Program code
Writing the program or coding
Logic
Language
Content markup languages
HTML, XML, XHTML, SVG
Programming languages
C, C++, C#, Java, JavaScript, Visual Basic
Code
Program test
Debugging to test code and eliminate errors
Errors
Syntax errors
Logic errors
Testing Process
Desk check
Manual test
Translate
Sample data
Beta test
Program documentation
Written descriptions about a program
Review
Finalize
Distribute
Program maintenance
75% of total lifetime cost
Error-free
Ease of use
Standardization
Changing needs