Software Architectures & Design Paradigms

1. Describe the following design architectures in your own words:
   a) Client-Server
   b) 3-Tier
   c) N-Tier
   d) Peer-to-Peer (P2P)
   e) Pipes-and-Filters
   f) Event Driven
2. Describe each of the following design paradigms in your own words:
   a) Object-oriented design
   b) Function-oriented design
   c) Data-structured centered design
3. In your own words, describe the differences between design principles, architectures, and paradigms.

1. .
    1. Client-Server: The server provides the services to the user and waits for requests from users. The client then requests or uses the service and that is sent to the server to be processed
    2. 3-Tier: Divides the application into three layers, the user interface, logic, and databases
    3. N-Tier: Similar to 3-tier but with more possible layers with each having its own specific role
    4. Peer-to-Peer: Peers can share files as if they were a client and server, the data is transferred between users.
    5. Pipes-and-Filters: Processes data in stages and each filter performs one task and passes its output through a pipe
    6. Event Driven: The system reacts to events and waits for the events to respond. Like buttons or dropdowns.
2. .
    1. Object-oriented design: Uses objects that have their own data and functions which call other objects
    2. Function-oriented design: Operates mainly on data being used by singular functions
    3. Data-structured centered design: Looks at data more than the functions. Designs around the data and how to access it.
3. A principle gives you overall guidance on how to distribute design architecture and paradigms. Design paradigms give you different ways to organize the higher level design.

Design paradigms are different ways of performing the top-down functions. Design Architecture shows you where the tasks are performed