National University of Computer and Emerging Sciences, Lahore Campus

Course:	Software Engineering	Course Code:	CS-3009
Program:	BS (Computer Science)	Semester:	Spring 2023
Duration:	30 Minutes	Total Marks:	10
Quiz Date:	20-March-23	Roll No.	
Section:	6E	Name:	

Question 1: (5 Marks)

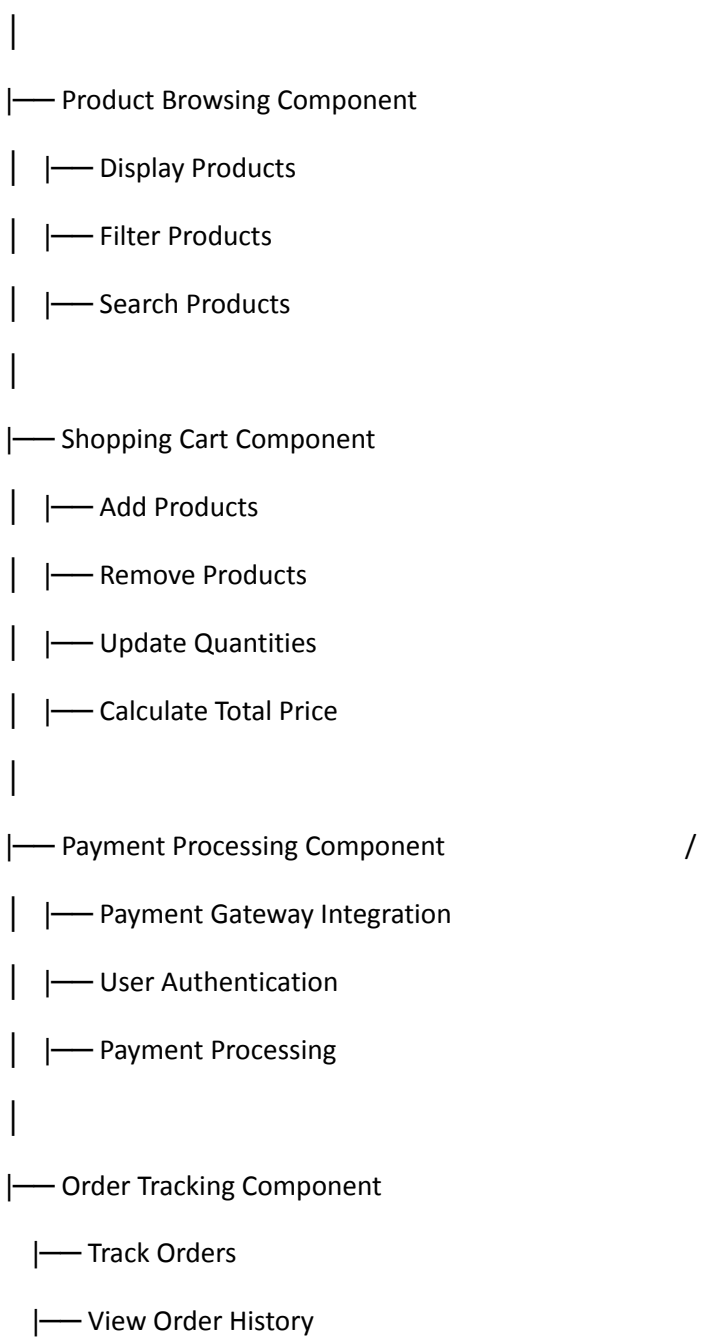
Provide a functional decomposition of the below mentioned system.

Suppose a company wants to develop a new e-commerce website. The website will need to have a variety of features, such as product browsing, shopping cart functionality, payment processing, and order tracking.

The company decides to use functional decomposition to break down the project into smaller components and ensure that each feature is implemented properly. For example, the product browsing component will handle displaying products on the website, filtering products by different categories, and enabling users to search for products. The shopping cart component will manage the shopping cart functionality, allowing users to add and remove products, update quantities, and calculate the total price. The payment processing component will handle payment gateway integrations, user authentication, and processing payments. Finally, the order tracking component will enable users to track their orders and view order history.

By breaking down the website into smaller components, the development team can focus on implementing each component separately, ensuring that each feature works properly before moving onto the next. This also makes it easier to manage the project and track progress. Additionally, if any issues arise during development, the team can isolate and address them in the specific component rather than the entire website.

E-commerce Website



Question 2: Describe the following Architectural Style? (5 Marks)

Architectural Style	Pipe and Filter
Description	● The input data is passed via Pipes, through a sequence of data transforming components, known as filters in order to produce the output data. ● The Pipes act as the connectors that simply transmit the data from one filter to the next one without modifying the data. ● Filters are independent functions. And they can be executed in parallel.
When to use	● Commonly used in data processing applications(both batch ,embedded & transaction based) where inputs are processed in separated stages to generate related output & there is limited user interaction. ● Used for systems which are non interactive. ● When large processes can be broken down into multiple steps.
Advantages	● Filters reusability in other pipe and filter style programs. Eg: Unix shell ● System are evolution friendly as we can easily add new filters or remove existing one into the system configuration, without making any modifications on other part of systems.s ● Concurrent execution of filters. ● Help to understand the entire system's effect on input and output as the composition of the filters
Disadvantages	● Not good at handling interactive applications. ● The format for data transfer has to be agreed between communicating transformations. Each transformation must parse its input and unparse its output to the agreed form. This increases **system overhead** and may mean that it is impossible to reuse architectural components that use incompatible data structures. ● Not appropriate for long running computations