Q1 (Khator, 2021) (BuMallick, 2022)

For Q2.1 - Data about courses, such as the name of the course, name of the creator, category that the course belongs to, etc., I would recommend using a relational database.

Relational databases are well-suited for structured data with clearly defined relationships between entities, such as courses and their attributes. In this case, each course can be represented as a row in a table, with columns for attributes like course name, creator name, category, etc. Relationships between tables can be established through foreign keys, ensuring data integrity and enabling efficient querying and manipulation of related data.

Relational databases offer ACID (Atomicity, Consistency, Isolation, Durability) properties, which ensure data integrity and reliability, making them suitable for managing critical data such as course information.

For Q2.2 - Videos, pictures, and files the course creators want to make available to those purchasing their courses, I would recommend using a NoSQL database, specifically a document-oriented database or a distributed file storage system.

NoSQL databases are well-suited for handling unstructured or semi-structured data, such as multimedia files (videos, pictures, files). Document-oriented databases, in particular, are designed to store, retrieve, and manage documents in formats like JSON or BSON, which are flexible and can accommodate varying data structures without requiring a predefined schema.

In this scenario, each multimedia file associated with a course can be stored as a document in the NoSQL database. These documents can include metadata such as file type, size, and references to the corresponding course, allowing for efficient retrieval and management of multimedia content.

Additionally, NoSQL databases are often horizontally scalable and designed to handle large volumes of data, making them suitable for storing and serving multimedia files to a potentially large number of users accessing online courses.

In summary, I would recommend using a relational database for managing structured data about courses and a NoSQL database, specifically a document-oriented database or distributed file storage system, for storing and serving multimedia files associated with the courses. This approach leverages the strengths of each type of database to effectively manage different types of data in the context of an online course marketplace.

Based on the provided business rules, we can design the database schema with appropriate tables and their relationships. Here's a breakdown of the tables and their attributes:

https://viewer.diagrams.net/?tags=%7B%7D&highlight=0000ff&edit=\_blank&layers=1&nav=1&title=ERD%20ASsignment%201.0.drawio#R7V1bc5s4G%2F41vvlmnJHE%2BdKHON1t2k037abdm45iE5sWGy%2BQJumv%2F4QBGyQZY4IsYsh0pkaAEHoevXpPEj1ltHy%2B8vF68cGb2W4PgdlzTxn3EEIKMsh%2FUclLUgI0PS6Z%2B84sLoO7glvnt50UgqT00ZnZQe7C0PPc0FnnC6feamVPw1wZ9n3vKX%2FZg%2Bfmn7rGc5spuJ1ily29c2bhIi410%2FeKyt%2FZznyRPhnqVnxmidOLkzcJFnjmPWWKlMueMvI9L4x%2FLZ9Hthv1Xtovd3%2B83LnXP%2FWrPz8F%2F%2BEvw%2FefP%2F7TjyubHHPL9hV8exVWrvr3z4fJu3%2FUH1%2FXN5NPT%2BBqcP9nP7kF%2FMLuY9JfIxx6%2FtzzX5KXDl%2FSngyenKWLV%2BRo%2BOCtwtvkDOmHIXad%2BYr8npIG2j4p%2BGX7oUNAGCQnQm9NSqcLx51d4xfvMXqNIMTTn%2BnRcOH5zm9SLXbJKUgKyGk%2FTPiE9NwVt9GdpBiQUt8OyDU3ad%2FAbdE1DsLkmqnnungdOPebBkeXLLE%2Fd1ZDLwy9ZVqR97ia2bPkaAv25iD0vZ9b%2BkT3PziuO%2FJcz990jWIrUxOApGMy5WDzt60hc2YILG1zpiS2CQeifrWfM8xOsL6yvaUdRqCB5KwGEoYnA1dRtfj4aTcKoJ7gv8iMACspw8nAm2%2Br3j7tbzJQ8WpOenP7OPKuucdBFZR7HNLzj8MuYdAKh%2FYwwiPIUpr8yLzprmhD9CNID7mkjzj%2FBzkAPWN4875njJkBQHo%2BzJDdtR%2FCvVQP1njqrObXm2vG6q7k7%2BTVoyKP3Pvgbmi2cGYze7WhYYhDHDM14sfac1bhpm%2B0IflHenAELrSeRho0Isdwd0z%2BRZf7hIArwjfsbAhlk2HwZEdDgUO1QplwmGoveQiPhTrLrBzGxwKKGEA%2F4qV9dvgVSKhFuHSTn6JQ1pBklHUG5bETTEmfhGWnKtBNVYoxUIZExWGmqofNH2%2BqUhU01gyBU1Vf1fKTRx9aJSerbeFxsxWkZivFbO5sZe6l%2FXnPVrVKO700JyXMaeG7qx%2Bm9uV7uAgGxofwXncHQzIEWC3Fe%2FQDO0V90qFeO%2BqnnOO4qCPWIJv43nJMJEwHda1QG6ZsqFmt9bPXAV070BCospFW9k7hN74z7QCvGXClojJXm6UCWcA%2F23i6IPZGZ6mUtlQAMDHPqbbfUgFAM4Q61XSLshvKMk2tZKYoagkzxWiGmQLVfZw%2FbzOlpBTbioQ3ZIEwgJ6lV00YgPKNCQbA20ciBToM35CVwGoSl0vsuB2Cb0f9ZyfGIV797BBspD7PRVDjIjiY8oMPHZD7gNRkqzRsCGnoeB2ApQE0Zas0BgPgnX0fOGfoNBNnV4AT6jT8NrMoxqENBsTOO7LXO6JjADZekNLeEcUAYDQS6B1RYD7lqHQKkIr2M22%2Fd0SjosYNSTm6%2BqT%2FtXq30KxPP6D323gIxuovjg6YD%2Ba12zdilGZaUzKOeNFZKoesi88KAF56EhJqiVdMMs6n9LvwcWadZ2M7mDrr0PFWHdr1on1SHw0fbnaCPs%2FQrDgMpUddEeumuXaCkPT3WWZViEOyrJsmRbx2K59Ngoosqy%2FrGcFx1huh3gB0cJZ32siGk9WVk8jw9xH2YqWZgbOz%2FPdb%2FgBb0DjG8kdjQxeaF2GhvCmuaCUnA7OAc28uL4IfRWeFGZUXcZ6GIku1QtnQSNOfD%2Bjh5WMdokJselMQohzlf0jEgdv5o4%2BYleA9hjY6ZlYCQL8cTATOSn1ITUt9aJWcl85rXRGf9Zyo9ob15%2B2TrurqKJYcb2f6QmwMvFtXJBx2%2BbmAbMz1NppdztI1Ihls6UmDiF0zermadVDXD7X87ELEelfO03MtG2npWYgK60mIFbbvXfbM8WuLNGAflT0DABwPRWbPIEAbK0ZZYwWevbGisE6XvLHSaa0HZd5WfrwdY0VBnbFyetilGysK65q4sf1orsJzIpNXoe%2FcP0ahwA74WoGXbriYrHOCKAoEPGeNu22ejlFwMFEnkHaMgqNPkr0KRSk4MK9uqEApqd6kqw7ON0host6ZDO%2FP2yFbUpptRcPb0V5M1g1zlrmiwhCUroiYrHOlPUuoawJRulJhsX6TtqyhrglC%2BV5Oi10H346Vm3UhKN17abFJFu1ZulkXitIXUENQaKF9TzOhGEw7U22vqfYAsAIwa6oVbB4%2FNsSaaopCreQsmzfThnxOVqsnrO%2FS%2FxgJ8XYMNQhK2d8drs0137irrvemXncR06NnKTBQhhEY5R2Kk82fwFlKM%2FPTRr%2B0llsxYtrQeYrLfTZg2tJlB4WSoZFzFLfFiNU6WhAJFQXnKdcccFvM%2BjP4Ec62LHasB9aqGSyVNEn7x%2Fzfy5F2P%2Fm6eP%2Fh3%2BDu4zXgbDB28%2BhPF7jTNY7RNSYTACZH6Rriv1GjUMoGNEv6tSuGL5uancVjPcd6ilj%2FGNhnHrusnK9RJDsaqZNwW8zxhLRAJ5EL%2BkljorwWsyFRXiamMexwrxX3k4ZReS3mLGSnP0TWjff6cT9t7JXXZIUV861xjkrG%2FpRR27%2BG7%2B8GNsImePocrK%2BnD9fmZV%2Fl7IvVYc9iz2Balg4NifVyBT6bhc1gbK9mg%2Bgj7eRo5W1s2aRrINOBpDP8l6%2FkoA8uAIRpybfo4gsFqmnB%2BDl7w%2Fgle3Rj%2Bw55ucgmjgufnfDrpgKgweT4W%2FwIaOhJwa7C6OAlc0BXxwJXZDwSg3puF4VMErDsGfWF%2BoAoyVO7oOctPjN828Wh8ytfWYFVeRONhYwJS3%2BjG6W79KR1xA1Lbtuxh6lJofZVgPTWUXHXMBXVZW9C1s3yKmYmLIqIqVp5GimKJphGOTYUJSFSPKqfH0YeVZUO5pelR5%2Fmh0LXtIcfBDD8krksEeb7W6yk25%2BnTTYQxbe4ynrZx7o76mAfkWHAzJMPIenkSxPvRJMPUl9W01BV2USlrmjIukjXSJ9KPLEKcx0EARcqoic5YMgmyDYvQDRDVEDlJBkVGaJRFSl0RTVJJ7rB6XPECifWPVOL0gYudLRV0b5tCgBAVXS26koWd0NMvpJVP%2FuMPJiVdSddOVBRTezTAf85QtnH%2BdJtPZLPMlBG8pFjAGULPu00xKO31kR06kpZ4kGwb5POmpnHPChtsljqsZ6KmgQfIEpmRvD1o3nYOq3kK9yIUjQDdZ2ax0xWoypLQhMdrkuwdsbZAK0uogCaKOjEM2RRqonwGZIOkKe%2Bw6M1eEPPVdRnsvVqElSaSrcYFDaMvr6vn0KuCVLoInMTUnQFpimer4w77KCgU4Tw1aDRtCpOrCb9HaqS3rBj6Wpp%2FAbvaxd9fdousXSt1%2FZ9FbUEmKCUYKrqpGD3eqJrEjwJcvZTqkWqREIkdlrt7ERL1RowC6qnoQjNEXof4aoudkE%2BCrq51glEhFKzkZhRwPLUI1Oc%2BrqwUs7mLPbFHkfXg9Zl2ifCnf6I3iO7MmOprz9CFV0QHRCkf6lvoO4YACNLzeJpkbmBUvsEkb7moEHW6tDzpFetSvJ252wBIEt8mKqFp3K2FGQaHlQVUzKLHzZUvIJZ%2BVo%2BWEZFZQV5ZfrqnhbvbRh9Q9q55W9IctbqGljcDBU2K62HdDfK34iSx3MDTP%2Fv0UtP9INNKvyAXADV9fOGsel58mse%2FQ8v%2FpfWRZoWVxefYYbu08IJ7ds13pD4ycfr%2FOBN2licJLJ%2FgLD0TRVSGtNUtGWSRlJ6ZXNGVIpjteUL8dTK2tCADUdDpx2sstHgKVpxDwZrvHoVGiA3NuLqmoUGpM1l3n66J4WD56FujahqHBo8haw1okpLEmVo81LavIE4aLxCPd7qstsMmm8Ze67IgmPck7WZdHGHCvc4VDbg6Ipe7XJ4hdOKSxIeR1ojPxkByvnE4mmHbKunM9rpz1mdeVo0eMnarUHD0DRKu0i3EJeGBy%2FK3Bo8NIXW9pDs8SFU3Ws6HhYVm5dumXJTZFsDh0F5oBVVtrTiJRm0Bg6THh2q5NHBTaNsDRy0UxPKFlacL6W2CA6TWha0XYQoDQ6BqhVoPBxIz6u68keHQM2q%2BXD0Wcem9NlDoG7VfECILZjDQzYaSs156alns1c%2BNaUwWcBUe5WTs%2BrxlRbtOXE44K%2Fx2fDa%2BL5Ofa1IqepV3QU6dr4JQRF%2BnTErDgTs6Ru2K8T3JyswOQGH7kD06x%2B8Y6tgVL%2Bj7lRX%2FshutVrIZMAosmNI3BSr9uBBRW9Uzt4xp4Wj1S4eRImk7bI9ackHrU6U6tP7CyDZDmlVaKpU4%2FFgsnalu6RVgU635ptNfZWaP5C4%2BYMc%2Bl7UPzttjLzn4oM3s6Mr%2Fg8%3D

Product Table

ProductID (Primary Key)

Name

Component Table

ComponentID (Primary Key)

Name

Product\_Component Table (to handle the many-to-many relationship between Product and Component)

ProductID (Foreign Key referencing Product Table)

ComponentID (Foreign Key referencing Component Table)

Quantity

Supplier Table

SupplierID (Primary Key)

Name

Address

Supplier\_Component Table (to handle the many-to-many relationship between Supplier and Component)

SupplierID (Foreign Key referencing Supplier Table)

ComponentID (Foreign Key referencing Component Table)

ProductionLine Table

ProductionLineID (Primary Key)

Colour

ProductID (Foreign Key referencing Product Table)

These tables and their relationships adhere to the business rules provided and will allow for effective data storage and management within the manufacturing process application.