Question:

Student should carefully read the context of "Payroll System" to answer questions in the test.

The ABC company wants to develop a new system to allow employees to record timecard information electronically and automatically generate paychecks based on the number of hours worked and the total amount of sales (for commissioned employees).

The new system allows employees to enter timecard information, enter purchase orders, change employee preferences (such as payment method), and create various reports through the website.

The system will retain information on all employees in the company (ABC currently has around 5,000 employees world-wide). The system must pay each employee the correct amount, on time, by the method that they specify. For cost reasons, ABC does not want to replace one of their legacy databases, the Project Management Database, which contains all information regarding projects and charge numbers. The new system must work with the existing Project Management Database, which is a SQL Server database. The Payroll System will access, but not update, information stored in the Project Management Database.

Some employees work by the hour, and they are paid an hourly rate. They submit timecards that record the date and number of hours worked for a particular charge number. If someone works for more than 8 hours, ABC pays them 1.5 times their normal rate for those extra hours. Hourly workers are paid every Friday.

Some employees are paid a flat salary. Even though they are paid a flat salary, they submit timecards that record the date and hours worked. This is so the system can keep track of the hours worked against particular charge numbers. They are paid on the last working day of the month.

Some of the salaried employees also receive a commission based on their sales. They submit purchase orders that reflect the date and amount of the sale. The commission rate is determined for each employee and is one of 10%, 15%, 25%, or 35%.

One of the most requested features of the new system is employee reporting. Employees will be able to query the system for the number of hours worked, totals of all hours billed to a project (i.e., charge number), total pay received year-to-date, remaining vacation time, etc.

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The Payroll Administrator maintains employee information. The Payroll Administrator is responsible for adding new employees, deleting employees, and changing all employee information such as name, address, and payment classification (hourly, salaried, commissioned), as well as running administrative reports.

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The payroll application will run automatically every Friday and on the last working day of the month. It will pay the appropriate employees on those days. The system will be told what date the employees are to be paid, so it will generate payments for records from the last time the employee was paid to the specified date.

The new system is being designed so that the payroll will always be generated automatically, and there will be no need for any manual intervention.

To start with, the team working on this project consists of 4 developers, 2 QA, and a Team Lead. The team may be supported by the Information Technology department of the company to understanding the terms of this business."

3. Suggest the most suitable software development model to build this system and clarify why you choose this model by the following criteria: (**3 points**)
    1. Requirements characteristics
        - reliability
        - types and number of requirements
        - how often the requirements can change
        - can the requirements be defined at an early stage
    2. Development team:
        - team size
        - level of understanding of user requirements by the developers
    3. User involvement in the project (Small/Average/Large)

Answer:

Best Suited model to develop the software:

The give description of the software states that the software is required to:

a) be completely accurate as its the application of employee payroll

b) the requirements are fixed

c) project size id medium

d) need to use the legacy system for database

Thus V-Model is the best Software development model for the given scenario.

Consideration for selecting the model:

1. *Requirement Characteristics:*

a) The software is required to be reliable and there is no chance that customer can tolerate the issue in the functionality. Thus the software is needed to be bug free.

b) The requirement are fixed and the size of the project is medium.

c) There is no chance of change in requirement as the requirements are well defined by the customer

d) The requirements are well defined at early stage of the project. The no f requirement, expected output and features are well sure by the customer.

2. Development Team:

a) The team size is medium and there is nothing mentioned about the change in the team size.

b) The development team will well understand the requirements and they will also get the support from the customer side to understand the existing system and the database.

3. User involvement:

The user is less involved in the project, they will provide the requirements and does not want any involvement or feedback in-between the development.

4.**Existing system to be re-used:** Legacy system is already available which is to be accessible by new system i.e. a blueprint of the database is available to be used as it is without access to modify it.

5. Delivery: There is no need of smaller versions of the software to be delivered to the customer. The final software is to be delivered to the customer at the end of the development.

6. **Need Verification**: As the payroll system application needs to be major error free, the verification is needed to be performed at each stage of the development which will be assured in **V Model**

Thus from the above considerations, it can be conclude that the V model is best model to be adopted for the development of the given system.