TUTORIAL - 3

U19CS012

Q.1.> Write down the functional and non-functional requirements for

a) Railways Reservation system

⇒ Functional Requirements

① Operator signup and login who will be able to:-

→ see available trains and their arrival and departure times across different railways stations
→ Availability of seats in each train
→ Seleching trains among a pair of source and destination
→ provide coach map of a train
→ Issue tickets to passengers with unique IDs.
→ Bill the passenger.
→ Cancelling ticket if required
→ Processing refund for the same
→ Generating coachwise list of passengers for each train before departure.
→ Generating daily report of ticket booking & cancellation.

Non-Functional Requirements

* Product requirements
→ system should be effecient in both performance and space. Response time of transactions and searching should be less because it's a realtime application
→ Easy to use interface
→ No data redundancy
→ multiple modes of transactions
→ Language options

* Organizational Requirements
  → Operator should authenticate using valid email with verification and password along with captcha

* External Requirements:
→ passenger's information should be secure in the software
→ Billings transactions should be done in secure way.

b) The ATM cash withdrawal system

Functional Requirements

① The ATM in idle state should show a welcome screen.
② User is prompted to enter a pin after a card is entered.
③ It should ~~be~~ determine account number from the entered card.
④ A menu with withdraw, Deposit, Balance check, statement, change PIN, on entering PIN.
⑤ A Transaction record can be printed on demand.
⑥ Card should be ejected (signal) when session is completed.

Non-Functional Requirements

* Product requirements
  → ATM should have a set of buttons: 0 to 9, Enter, clear and cancel.
  → The cash dispenser can be opened and refilled with cash.

* Organization Requirements → Available 24x7 hrs & all days
  → User must enter the PIN within 3 attempts and blocks access to the card in the 4th attempt.
  → PIN must be entered with secrecy
  → Error message should be displayed atleast 6 seconds.

* External Requirements

→ Should provide maximal security
→ Impossible to plug into its network
→ Transaction should have ACID properties (Atomicity Durability Consistency Isolation)
→ Should use several data formats according to the data ~~formed~~ formates of different banks.

c) Word processor with all possible features

Functional Requirements

① Should have different text formating options like bold, Italic, underline, etc.
② Create and Edit tables along with formatting
③ Images and Clipart
④ Grammer ~~and~~ Checking
⑤ Edit, Save and print documents
⑥ Copy, paste options
⑦ Features like header, footer
⑧ Prompt to save when closing unsaved changes

Non-Functional Requirment

* Product requirments
① Should support most of open file formats word documents
② Ease of use (less than hours training time for basic user)
③ Store document to cloud.

* Organizational requirment
① Authentication for cloud access.
② Verification of product key to use software

* External requirments
→ ① Document stored in cloud must be secure.

2> Suggest the most appropriate, generic software process model that might be used as a basis for managing the development of following systems :-

a) A system to control anti-lock braking in a car.
Waterfall model, as it is a critical system its requirements must be collected fully before the development of system.

b) A virtual reality system to support software maintenance.
Incremental development, as system requirements can keep changing due to complexity of software.

c) A university accounting system that replaces an existing system.
Waterfall model, system requirement can be predicted from existing system & it is leaking points.

d) Video sharing based application like Instagram
Incremental development, as system requirements can change due to complexity.

3.> Suggest why it's important to make distinction between developing the user requirements and developing system requirements in requirement engineering process.

3.> ① Yes, difference is Important.
→ User requirements are abstract statements. They describe the system's fcns and features of customer needs. Very few of the client, are engineers so they describe their vision informally from their point of view. They are developed by gathering information and understanding imp features correctly.
→ system requirements are detailed and formal explaination of requirements. They are developed by the engineers by analysing user requirements which include technical details of the implementation.
Hence, good planning is required for good software which starts with user requirements which in turn dictate the system requirements.