IT314 Software Engineering
LAB 1 Choosing Software Process Models

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Grp: 3

Giving reasons for your answer by taking examples based on the type of system being developed, suggest the most appropriate generic software process model that might be used as a basis for managing the development of the following system.

1. A simple data processing project.
   Ans: **Waterfall Model**
   Reason: As the project's requirements are already known, are not going to change and the model is straightforward, we would be using the Waterfall model.

2. A data entry system for office staff who have never used computers before. The user interface and user-friendliness are extremely important.
   Ans: **Prototype Model**
   Reason: Here, the office staff has less experience i.e. a novice user, so it's important for him to get familiarized with the user interface, so the Prototype model.

3. A spreadsheet system that has some basic features and many other desirable features that use these basic features.
   Ans: **Incremental Model**
   Reason: As the new features are implemented using the already existing basic features, it seems like the model is getting extended. So, the Incremental model.

4. A web-based system for a new business where requirements are changing fast and where an in-house development team is available for all aspects of the project.
   Ans: **Agile Model**
   Reason: As the requirements are rapidly changing, and an in-house team is available for all the aspects in order to do the required frequent changes, so Agile model is preferable here.

5. A website for an online store which has a long list of desired features it wants to add, and it wants a new release with new features to be done very frequently.
   Ans: **Agile - Scrum Model**
   Reason: As a new release is required to add new features, there is a long list of requirements, so the Agile model with Scrum framework (for multiple sprints) is preferable here.

6. A system to control anti-lock braking in a car.
   Ans: **Spiral Model**
   Reason: As there is a factor of risk associated with this project because brakes are the most important aspects of a car, a Spiral model is preferable here.

7. A virtual reality system to support software maintenance.
   Ans: **Evolutionary Model**
   Reason: The virtual reality system is evolving continuously with the changing times, so the VR system needs to evolve each time maintenance activity is carried out. So, the Evolutionary model is preferable here.

8. A university accounting system that replaces an existing system.
   Ans: **Waterfall Model**
   Reason: Here, the accounting system already exists, so we have all the data related to the system requirements, design, etc. So, the Waterfall model is preferred.

9. An interactive system that allows railway passengers to find train times from terminals installed in stations.
   Ans: **Prototype and Evolutionary**
   Reason: Here, as the system is interactive, the user interface plays a significant role, so using the Prototype model is preferable. Also, the system needs to be updated as the need arises to add new and desirable functionalities, so the Evolutionary model can also be used.

10. Company has asked you to develop software for a missile guidance system that can identify a target accurately.
    Ans: **Spiral Model**
    Reason: There is a risk factor associated with this system, as a small glitch in the software may lead to the death of innocent people, so the Spiral model is preferable here.

11. When emergency changes have to be made to systems, the system software may have to be modified before changes to the requirements have been approved. Choose a process model for making these modifications that ensures that the requirements documents and the system implementation do not become inconsistent.
    Ans: **Agile Model**
    Reason: The emergency changes should be carried out faster, also they should be done before the requirements are fixed, so the Agile model is preferable.

12. Software for ECG machine.
    Ans: **Spiral Model**
    Reason: As there is a risk factor associated with the ECG machine and its a question of lids and death, so the Spiral model is best suited here.

13. A small scale well understood project (no changes in requirement will be there once decided).
    Ans: **Waterfall Model**
    Reason: As, it is a small scale project and all the requirements are fixed in advance, the Waterfall model is preferred here.