IT-314 Software Engineering
LAB 1

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Group 5

1. **A simple data processing model.**
   Waterfall model.

   The requirements of data are fixed and the aim of building the model is also well understood. As the waterfall model is simple and easy to execute, it can be used efficiently to get the work done in a short duration of time. Data processing also utilizes a stack of well known and easy to use tech stack, hence the waterfall model can be used effectively.

2. **A data entry system for office staff who have never used computers before. The user interface and user-friendliness are extremely important.**
   Prototype Model.

The prototype model is ideal for novice users who don't have much experience and are new to their work. The task becomes easier for them as they just have to keep building up on existing prototypes. Also, the prototype model lays emphasis and focuses on User Interface(UI), hence being the right model to use.

3. **A spreadsheet system that has some basic features and many other desirable features that use these basic features.**
   Evolutionary Prototyping.

   Evolutionary prototyping is the best model to use as we rebuild and refine each prototype in this model. Every prototype can add new features, which utilize these pre-existing features and evolve the 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.**
   Agile Software Development.

   The main problem with traditional development is change management, and this model helps deal

with that. It is known that requirements are changing fast. Also, an in-house development team is available which can help speed up the process of coding and testing and ensure division of labour. Hence, agile development is a robust model for this task.

5. **A Web-site for an on-line 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.**
   Agile Scrum Model.

   Scrum model can be used effectively, as the website has to be changed frequently and agile method solves the problem of traditional development-change management, effectively. Regular scrum cycles of 1-3 weeks can be used to review the existing model and add new features.

6. **A system to control anti-lock braking in a car.**
   Waterfall Model.

   The requirements are fixed and well known, hence, the waterfall model is the best model to use as it is both easy and efficient to implement.

7. **A virtual reality system to support software maintenance.**
   Spiral model.

   The Spiral model is ideal for projects which are large and complex, and for new and emerging technologies. It focuses on minimizing the risk and is the best model for tasks where the requirements are not known from the start, which is clearly the case for our VR system.

8. **A university accounting system that replaces an existing system.**
   Waterfall Model.

   As the accounting system is replacing an existing system, majority of the requirements are known beforehand. Just some changes have to be made in the preexisting system, which can be effectively made straightforwardly using the waterfall model as the requirements will remain fixed.

9. **An interactive system that allows railway passengers to find train times from terminals installed in stations.**
   Prototype Model (Incremental).

As the system is interactive and based on UI, the prototype model is the best for this case, as it focuses on UI. Also, changes can be made to existing prototypes to improve the UI and user friendliness, by adding new features, or improving faults or bugs.

10. **Company has asked you to develop software for a missile guidance system that can identify a target accurately.**
    Spiral Model.

    Systems managing missiles are high on risk, and hence it is necessary to use a model that focuses on minimizing the risk. The spiral model is hence, the best model for this task.

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.**
    Iterative Model.

Time is of the essence as emergency changes have to be made to the system, and hence risk of a long project cannot be taken. The risk is also high. Hence, the iterative model is the best model for this scenario.

12. **Software for ECG machine.**
    Spiral Model.

    As building software for ECG machines is high-risk and the main focus has to be on minimizing the risk involved, spiral model is the best method.

13. **A small scale well understood project (no changes in requirement will be there once decided).**
    Waterfall Model.

    No changes are required and hence, the requirements are fixed and the project is also small scale and well understood. Hence, the waterfall model can be implemented efficiently and easily.