



1.2.3 Development Methodologies

1. A software development team is writing a word game. The team is using Rapid Application Development (RAD).

a) Describe the Rapid Application Development process.

[4 marks]

- **Prototype is created**
- **Feedback is used to identify changes/improvements for the next iteration**
- **Changes are made**
- **This process repeats**
- **... until the prototype becomes the final product**

b) Describe **two** benefits of using RAD.

[4 marks]

- **Reduced development time**
- **... due to time boxing / each subtask being given a strict time limit**
- **Increased user involvement**
- **... so issues can be identified and fixed early / more likely to meet client requirements**
- **Requirements can change or be refined during development**
- **... so therefore it is more flexible**

Allow other suitable responses

2. A company develops anti-virus software which needs continuous updating to combat new virus threats. The programmers use an Extreme Programming approach when developing the updates.

c) Explain what is meant by Extreme Programming and why it is a suitable approach in this case

[4 marks]

- **Extreme Programming (XP) is an agile, iterative development methodology**
- **It focuses on producing high-quality code**
- **It is designed to allow development to respond to changing user demands**
- **It uses practices such as pair programming**
- **...regular code reviews / testing**
- **Types of viruses is continually changing**
- **Code must be of good quality to detect viruses effectively**





3. A programmer has been asked by a client to create a complex computer program.

Compare the spiral model and waterfall lifecycle methodologies for this task.

You should include the following in your answer:

- How both methodologies could be used to develop a complex computer program
- The benefits of each methodology for this task
- The drawbacks of each methodology for this task.

[9 marks]

Knowledge

- The spiral model has four quadrants (determine objectives, identify and manage risk, develop and test, plan next iteration).
- Client feedback then informs future development and prototypes which feedback into future revisions.
- Waterfall has a structured analysis/design/development/test flow.
- Progress to the next step is not made until the previous step is completed.
- Application
- The spiral model relies on frequent client feedback.
- Spiral produces functional prototypes where features are added incrementally.
- Spiral model has more focus on risk; projects may be modified or even dropped if risk is too great.
- Waterfall is much more structured and very reliant on getting the definition of requirements correct at the start; changes are harder to add in at a later stage. However, this forces the definition to be well understood.
- Evaluation
- Spiral involves client feedback, prototypes and evolving projects. Better option where requirements may change.
- Waterfall is better where requirements are very clear to begin with and outcomes known.
- Spiral is better for risk management.
- For a large development team, Waterfall may be appropriate because its clearly defined stages can make responsibilities easier to organise.

