Answers to these Questions will be discussed during Tutorial/Workshop. You are required to supply the answers in your Practical Work Folder.

All questions are from Text Book – Sommerville, “Software Engineering, 6th Edition”.

1.3 What is the difference between a software process model and a software process? Suggest two ways in which a software process model might be helpful in identifying possible process improvements.

1.6 Apart from the challenges of legacy systems, heterogeneity and rapid delivery, identify other problems and challenges that software engineering is likely to face in the 21st century.

2.4 Suggest how the software systems used in a car can help with the decommissioning (scrapping) of the overall system.

2.7 A flood warning system is to be procured which will give early warning of possible flood dangers to sites that are threatened by floods. The system will include a set of sensors to monitor the rate of change of river levels, links to a meteorological system giving weather forecasts, links to the communication systems of emergency services (police, coast guards etc), video monitors installed at selected locations, and a control room equipped with operator consoles and video monitors. Controllers can access database information and switch video displays. The system database includes information about the sensors, the location of sites at risk and the threat conditions for these sites (e.g. high tide, south-westerly winds), tide tables for coastal sites, the inventory and location of flood control equipment, contract details for emergency services, local radio stations…etc.

Draw a block diagram and a possible architecture for such a system. You should identify the principal sub-systems and links between them.

3.1 Giving reasons for your answer based on the type of system being developed, suggest the most appropriate generic software process model which might be used as a basis for managing the development of the following systems:

- a system to control anti-lock braking in a car;
- a virtual reality system to support software maintenance;
- a university accounting system that replaces an existing system;
- an interactive system for railway passengers that finds train times from terminals installed in the station.

3.8 Explain why a software system that is used in a real-world environment must change or become progressively less useful.