

UNIVERSITY OF PORTSMOUTH

FACULTY OF TECHNOLOGY

Department of Electronic and Computer Engineering

**B302 – Management and the Technology Professional
U13505**

Date: 10 March 2008

Time: 90 minutes

INSTRUCTIONS

Answer ALL questions.

There are **25** marks for question 1, **35** marks for question 2 and **40** marks for question 3.

This is a closed book examination.

Provided

None.

Calculators permitted are:

Casio FX 85 Series

Casio FX 83 Series

Examiners:

Professor R. Pethig, Mr C. Nguyen

CASE STUDY QUESTION 1

If you were Phil Zimmermann back in 1991, would you have published PGP as free software?

[25 Marks]

SOURCE FOR CASE STUDY QUESTION 1

Below is a modified excerpt from Wikipedia about the Pretty Good Privacy (PGP) software:

PGP is a computer program that provides cryptographic privacy and authentication. PGP is often used for signing, encrypting and decrypting e-mails to increase reliability for e-mail communications.

Phil Zimmermann created the first version of PGP encryption in 1991. No license was required for its non-commercial use. There was not even a nominal charge, and the complete source code was included with all copies. PGP found its way onto Usenet and from there onto the Internet, and it very rapidly acquired a considerable following around the world. Users and supporters included dissidents in totalitarian countries, civil libertarians in other parts of the world, and the 'free communications' activists who call themselves cypherpunks (who provided both publicity and distribution).

Shortly after its release, PGP encryption found its way outside the United States, and in February 1993 Zimmermann became the formal target of a criminal investigation by the US Government for "munitions export without a license". Cryptosystems using keys larger than 40 bits were then considered munitions within the definition of the US export regulations; PGP has never used keys smaller than 128 bits so it qualified at that time. Penalties for violation, if found guilty, were substantial. After several years, the investigation of Zimmermann was closed without filing criminal charges against him or anyone else.

[source continues on next page]

Zimmermann challenged these regulations in a curious way. He published the entire source code of PGP in a hardback book, via MIT Press, which was distributed and sold widely. Anybody wishing to build their own copy of PGP could buy the \$60 book, cut off the covers, separate the pages, and scan them using an OCR program, creating a set of source code text files. One could then build the application using the freely available GNU C Compiler. PGP would thus be available anywhere in the world. The claimed principle was simple: export of munitions—guns, bombs, planes, and software—was (and remains) restricted; but the export of books is protected by the First Amendment. The question was never tested in court in respect to PGP, but had been established by the Supreme Court in the Bernstein case.

US export regulations regarding cryptography remain in force, but were liberalized substantially throughout the late 1990s. Since 2000, compliance with the regulations is also much easier. PGP encryption no longer meets the definition of a non-exportable weapon, and can be exported internationally except to 7 specific countries and a named list of groups and individuals.

CASE STUDY QUESTION 2

At the end of the system security analysis (Step 8), the development team finds a critical vulnerability that requires 4 additional weeks to fix. What action would you take as the project manager?

[25 Marks]

Display the network diagram and critical path method calculations for this project.

[10 Marks]

SOURCE FOR CASE STUDY QUESTION 2

Below is the project plan to install a new e-learning system, WebCT, at a university. The current project plan is scheduled to complete 1 week before students start the new academic year.

Step #	Description of step	Duration (weeks)	Predecessors
1	Implement test infrastructure	2	-
2	Technical training and support	2	1
3	Initial migration and course development	1	1
4	System integration	2	3
5	Implement production infrastructure	2	2, 4
6	Operate pilot courses	3	5
7	Evaluate results of pilot courses	2	6
8	System security analysis	3	5
9	Production system rollout	4	7, 8
-	Completion of WebCT implementation	-	9

CASE STUDY QUESTION 3

As the IBM engineer, would you choose to develop the device driver software entirely on your own or use the open source software?

[25 Marks]

Display the decision tree and present value calculations used to analyze this problem.

[15 Marks]

SOURCE FOR CASE STUDY QUESTION 3

You are an engineer on the IBM BladeCenter QS20 product team responsible for providing a device driver in the server product. If you develop the software yourself, there is a 50% probability that you will finish on time. There is similar software available on the Internet which uses the GNU General Public License (GPL version 2). If you use the open source software, there is a 90% probability that you will finish on time.

However, using the open source software would conflict with the IBM product license. If you include the GPL license, it would cause a license conflict and prevent the sale of the BladeCenter QS20. If you remove the GPL license, then you would be violating the open source software license.

If you develop the software yourself, it would likely take 20 days at an estimate of £500 per day expense to the project. The open source software would be free of charge. If you are late, for any reason, with your device driver software, the estimated cost to the project would be £4,000 per day at an estimate of 5 days late.

Development of the device driver saves £40,000 for the product team because the work did not have to be outsourced to an external consultant. The finance department has assigned the discount rate (k value) of 7% to this project. The duration for your analysis is 1 month.