UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

BIT

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2011/2012 – 2nd Year Examination – Semester 4

IT4204: IT Project Management
Part 2 - Structured Question Paper

21st July, 2012
(ONE HOUR)

To be completed by the candidate

BIT Examination Index No: _____

Important Instructions:

- The duration of the paper is **1 (one) hour**.

- The medium of instruction and questions is English.

- This paper has **2 questions** and **10 pages**.

- **Answer all questions.** All questions **do not** carry equal marks. (**82%, 18%**)

- **Write your answers** in English using the space provided **in this question paper**.

- Do not tear off any part of this answer book.

- Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.

- Note that questions appear on both sides of the paper.
  If a page is not printed, please inform the supervisor immediately.

- Use of nonprogrammable calculators is allowed.

Questions Answered

Indicate by a cross (✖), (e.g. ✖) the numbers of the questions answered.

To be completed by the candidate by marking a cross (✖).	Question numbers		
	1	2	
To be completed by the examiners:			

*Following is the case study pre-distributed. Some text has been added to it for the purpose of this question paper. **These new additions are underlined.***

Case Study

After several years of working as a programmer on a wide variety of platforms using several languages, you have now been recruited by a small software development company (**The S Team**) as its project manager. This company is specializing in Linux based software development and has a single programmer with Linux experience. The company is planning to bid for a contract to supply a weather prediction software for the Department of Meteorology (DM)**,** Sri Lanka.

DM wants the system to get weather data from the collection centres located in each district in the island to predict the short and long term weather conditions of different cities of Sri Lanka. It should also have the facility to archive the actual weather data collected from the different collection centres in order to utilize that data to make its weather predictions accurate. The system needs to be web-based so that the weather data from the districts could be entered and communicated to the server computer based at the DM head office in Colombo. The head office server computer and the computers for the districts also need to be supplied to DM by **The S Team** if they win the contract.

The S Team has also been assigned to complete the **Royalty Project** (described on the next page). Although the Sri Lanka Performing Rights Organization (SLPRO) had started the project it has not been completed. SLPRO has implemented the system but is unfortunately buggy. Thus, the data entry of existing song details has not been started as yet. Only after fixing the bugs and thoroughly testing the system, could the existing song details be entered. Since the project is long overdue, the Ministry of Culture and Arts (MCA) wants the system fully operational by 21st September 2012.

Since the time is limited with regard to the Royalty project, you have decided to recruit university students studying IT to enter the existing song details to the system once it is operational. To quicken the data entry process, you hope to teach the students the ``touch system'' which is expected to benefit the students throughout their careers. You need to make a payment to the students as well for the data entry task. The SLPRO has managed to obtain the details of all existing songs. Thus you do not have to worry with regard to the matter.

Royalty Project

A Summary of the IT4204 Case Study published for the academic year 2010/2011

New regulations under the Intellectual Property Act have been approved by the Parliament of Sri Lanka. Under these regulations the payment of royalty to the legitimate creators of songs that include the song writer, the music director, the publisher, and the singer was made essential. Accordingly, a radio channel should pay a sum of Rs. 3 per song that is aired through the channel. In the same manner, a TV channel should pay a sum of Rs. 10 per song telecast over the channel.

The *Ministry of Culture and Arts (MCA)* entrusted the *Sri Lanka Performing Rights Organization (SLPRO)* with implementing a suitable system to enforce these regulations. According to the plan, the SLPRO was to maintain a registry of songs. In addition to a

recording of the song, this registry should also contain comprehensive details of each song. That includes the title of the song, the names of the song writer, music director, publisher and the singer and the contact numbers, addresses and bank account details of each of them. The respective nominee of each of them was also to be stored to continue with royalty payments in the event of the death of any of them. When each new song is created, the creators of the song should register it with the SLPRO providing the relevant details.

The radio and TV channels of Sri Lanka are then free to use the songs recorded in the above registry. However, they should provide SLPRO with the monthly list of songs that were played on that channel during the month. They should also pay to the SLPRO, the relevant royalty payment due to the artists. The SLPRO will keep a certain small percentage of the fee for its own operating expenses and deposit the remainder into the bank accounts of the relevant creators of each song.

The SLPRO was to use a web server to facilitate its operations. It should provide information on various topics such as registration of songs and their usage. The relevant forms for song registration should also be available for download. The web server should let radio and TV channels submit monthly play lists and should also let them make the relevant credit card payments. The web server should also let artists view the details of the royalty payments due to them.

Entering the registry details of all the existing songs was also required.

A system administration manual was also to be produced by SLPRO.

The system was also required to be highly reliable and continuously available.

MCA wants this system to be usable in 12 weeks time (assume that there are no weekday holidays during this period).

The single programmer at S Team is quite capable of handling the DM project alone. However he needs to be given a training on the present implementation of the Royalty project. Since you have been taught the details of it, you can give that training to your programmer.

A power generator is available at DM head office. However an Uninterruptible Power Supply (UPS) has to be bought and supplied by you to it.

A web server has already been bought by SLPRO for the Royalty Project and is in a working condition.

The source code and the associated software of the present implementation of the Royalty system is available to you.

DM project is purely to be open-source based. Thus there is no software cost.

(1) | (a) Write down the hardware requirements (with the associated estimated costs) for the Meteorology Department (DM) Project.

(10 Marks)

ANSWER IN THIS BOX

(b) Assuming that you have the freedom to decide the DM Project completion date, construct a tabular Work Breakdown Structure (WBS) for the project. Your WBS should include level-1 tasks, their expected durations (in weeks) and their dependencies.

(**18 Marks**)

ANSWER IN THIS BOX

Continue

(c) Construct a tabular Work Breakdown Structure (WBS) for the Royalty Project. Your WBS should include level-1 tasks, and their dependencies.

(**14 Marks**)

ANSWER IN THIS BOX

Continue

(d) Assume that both these projects need to be started immediately and to save costs, you decide to use only your existing programmer for both these projects. List any changes required in the above tables (constructed in (b) and (c)) to achieve this requirement.

(**6 Marks**)

ANSWER IN THIS BOX

(e) Assume that a single network diagram for both these projects (as required in part (d)) has been drawn. Assume further that the MCA wants the Royalty project completed by Sept 21st 2012, and also incidentally the DM wants their project also finished by Sept 21st 2012. Write down the algorithmic steps that you would follow to change the network diagram to fulfil this objective.

(**12 Marks**)

ANSWER IN THIS BOX

Continue

(f) Comment on the project related risks of changing the network diagram as you listed in part (e).

(**6 Marks**)

ANSWER IN THIS BOX

(g) Assuming that no external programmers will be hired, estimate the cost for the DM project using the Bottom-up Method.

(**16 Marks**)

ANSWER IN THIS BOX

(2) Consider the following work breakdown table:

Activity code	Duration (weeks)	Precedents
P	2	-
Q	10	P
R	3	-
S	4	Q,R

(a) Draw the activity-on-node network diagram, find the floats of each activity, and decide the critical path.

(**10 Marks**)

<u>**ANSWER IN THIS BOX**</u>

(b) If the number of programmers needed for activities P, Q, R and S are 2, 0, 2 and 0 respectively, carryout resource levelling to level the programmer histogram.

(**8 Marks**)

ANSWER IN THIS BOX

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