

**THE OPEN UNIVERSITY OF SRI LANKA**

Faculty of Engineering Technology  
Department of Electrical & Computer Engineering  
Bachelor of Software Engineering

**FINAL EXAMINATION – (2010/2011)****ECX4267 – Software Engineering Concepts****CLOSED BOOK EXAM**

Time Allowed: 3 hours

Date: 12<sup>th</sup> March 2011

Time: 0930 – 1230 hours

**INSTRUCTIONS TO CANDIDATES**

1. This question paper contains one question in **SECTION A** and four questions in **SECTION B** on 4 pages.
2. Answer **ALL** parts in **SECTION A**.
3. Answer any **TWO** questions from **SECTION B**.
4. State your assumptions (if any) clearly

Continued...

**SECTION A:****Answer ALL questions****Question 01**

The following scenario is based on *Online Music System*.

(Copyright © 2002 by Karl E. Wiegers, <http://www.mrl.nott.ac.uk/~sdb/g52hci/group%20requirements/music-requirements-spec.pdf>)

The purpose of the application is to deliver an easy-to-use music sharing and downloading application. It should be available for even the most novice of computer users and run on small spec computers.

The application is a new piece of software which will be given a release number of 0.1. Future release numbers will follow the common number convention.

**System Features**

Below is a list of system features. Each feature has been given a priority and a rating depending upon its importance. The priority ratings range from one to nine; with one being the lowest priority and nine being the highest.

***Download Music (Moderate – 6)***

The system should allow music to be downloaded legally.

**Functional Requirements:**

REQ-1: The system shall allow music to be downloaded from a legal source.

REQ-2: The system shall display a library of songs to the user

REQ-3: The system shall display the progress when downloading a song.

REQ-4: The system shall display an error message to the user if the downloading of a file fails.

REQ-5: The system shall place a song in the library once downloaded, ensuring that the automatic sorting of songs is maintained.

***Playing Music (High – 8)***

The system should provide music controls in order for the user to control music played. These controls are essential in order for user acceptance of the system.

**Functional Requirements:**

REQ-6: The system shall allow music in the library to be played to users.

REQ-7: The system shall display the proportion of the song played, in relation to the total song length.

REQ-8: The system shall allow the user to stop playing a song.

REQ-9: The system shall allow the user to pause a song.

REQ-10: The system shall allow the user to 'shuffle' the playing order of songs.

**Distribute Music (High – 8)**

The system should enable the user to transfer songs from the system library to external devices. These external devices range from MP3 players to CD's.

**Functional requirements:**

- REQ-10: The system shall allow songs to be distributed to multiple devices.
- REQ-11: The system shall display devices currently connected to the system.
- REQ-12: The system shall allow a playlist to be synchronized to a device.
- REQ-13: The system shall display an error message if distribution to a device fails.
- REQ-14: The system shall allow music to be imported from external devices.
- REQ-15: The system shall allow multiple songs to be imported from external devices at any one time.

**Sorting and Searching Music (Moderate – 6)**

The system should incorporate features such as sorting of music based on events or occasions which are important to users. Also, searching will able users find the music they want to play or distribute easily.

**Functional Requirements:**

- REQ-16: The system shall allow the user to create song playlists.
- REQ-17: The system shall produce 'smart' playlists.
- REQ-18: The system shall allow user to search for songs.
- REQ-19: The system shall produce search requirements and place them in the library.

- |       |   |            |
|-------|---|------------|
| (i)   | Draw USE Case diagrams of the system  | [10 Marks] |
| (ii)  | Draw the prototype user screens (GUI) of the system                           | [10 Marks] |
| (iii) | Draw a flowchart to represent the algorithm of the system.                    | [15 Marks] |
| (iv)  | Draw Class diagrams for the system.   | [15 Marks] |
| (v)   | Draw Sequence diagram of the system   | [10 Marks] |
| (vi)  | Write top level pseudo code to implement "Playing Music (High – 8)" operation | [10 Marks] |

**SECTION B:****Answer any TWO questions****Question 02**

- (i) What are the most common problems in writing requirements? [05 Marks]
- (ii) Briefly explain advantages & disadvantages of *at least, five* requirements elicitation techniques. [10 Marks]

**Question 03**

- (i) Briefly describe the categories of software maintenance, give examples for each category from "*Online Music System*" above Question 1. [12 Marks]
- (ii) Briefly describe the software configuration management and why it is important for the software maintenance. [03 Marks]

**Question 04**

- (i) Why software test plan is important in software testing process? [05 Marks]
- (ii) Write five test cases of "*Online Music System*" above Question 1 [10 Marks]

**Question 05**

- (i) Briefly explain why software project management is essential in software development process? [10 Marks]
- (ii) How do you keep software scheduled path and software development path close together in software development process? [05 Marks]

— The End —