

UNIVERSITY OF MALTA
FACULTY OF SCIENCE
Department of Computer Science & A.I.

B.Sc. (Hons) – Year II

June 2003 Assessment Session

CSA2040: Windows Programming

18th June, 2003

0900 - 1130

This paper contains six questions. Attempt any four (4) questions. All questions carry equal marks. Calculators are allowed.

Question 1

- a) What is the purpose of the Windows *message loop*? Describe the Windows API calls found in a typical message loop.
(7 marks)
- b) Describe the structure of a Window *callback function*.
(6 marks)
- c) Name the two API calls used in Windows for terminating a process. Write short notes on each.
(6 marks)
- d) Why is the address space of a process sometimes called a "Virtual Address Space"?
(6 marks)

[Total: 25 marks]

Question 2

- a) Explain how *critical sections* may be used for thread synchronization.
(6 marks)
- b) Give an overview of how threads are scheduled in Windows.
(7 marks)
- c) What is the difference between the *base priority* and the *relative priority* of threads in Windows?
(6 marks)
- d) When the entry point of a DLL (DLLMain) is accessed a 'Reason' parameter is passed. Explain each value this parameter may have.
(6 marks)

[Total: 25 marks]

Question 3

- a) Windows timers can be set to run in the callback function of the parent window or in a separate callback function.
- i) How is this done?
 - ii) If the code associated with timer is set to execute in the callback of the parent window, how are instances of different timers identified?
- (9 marks)
- b) Explain how *implicit linking* and *explicit linking* work in relation to Windows DLLs.
- (8 marks)
- c) What is the purpose of the Winsock API?
- (8 marks)

[Total: 25 marks]

Question 4

- a) What are *mapping modes* in Windows? Why are they important?
- (9 marks)
- b) Write short notes on the following:
- Raster fonts;*
Vector fonts;
TrueType Fonts;
OpenType Fonts.
- (8 marks)
- c) Name and describe 5 character sets supported by Windows.
- (8 marks)

[Total: 25 marks]

Question 5

- a) Write short notes on the following:
- DefWindowProc;*
Device Contexts;
WM_PAINT.
- (9 marks)
- b) Explain how children controls (like buttons) are created in a parent Window and how messages relating to them are trapped and processed.
- (9 marks)
- c) Write down a simple resource script that includes an icon resource. How is the icon in a window set to the one created in the resource script?
- (7 marks)

[Total: 25 marks]

Question 6

- a) What is the *Component Object Model* (COM)? (5 marks)
- b) What is the difference between a COM *server* and a COM *client*? (6 marks)
- c) What is a COM interface? (7 marks)
- d) Briefly describe the *Global*, *Virtual* and *Heap* Windows functions for memory management. (7 marks)

[Total: 25 marks]