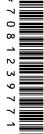


UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS General Certificate of Education Advanced Level

CANDIDATE NAME			
CENTRE NUMBER	CANDIDATE NUMBER		



COMPUTING 9691/31

Paper 3 May/June 2011

2 hours

Candidates answer on the Question Paper.

No additional materials are required.

No calculators allowed.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer all questions.

No marks will be awarded for using brand names for software packages or hardware.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

This document consists of 13 printed pages and 3 blank pages.



1 .		
2.		
3.		
		[
		[
	Explain the relationship between assembly languages and machine code.	[
	Explain the relationship between assembly languages and machine code.	
	Explain the relationship between assembly languages and machine code.	
(a)	Explain the relationship between assembly languages and machine code.	
(a)	Explain the relationship between assembly languages and machine code.	
(a)	Explain the relationship between assembly languages and machine code.	
(a)	Explain the relationship between assembly languages and machine code.	

(c)

This	e address part of a low-level instruction can be the address of the data to be used. is is a direct address. scribe the following types of addressing:
(i)	Indirect addressing;
	[2]
(ii)	Indexed addressing;
	[2]
(iii)	Relative addressing.
	[2]

3	Discuss the different types of data transmission media. Include a comparison of data transfer rates and transmission ranges in your answer.
	[8]

4

(a)	State what is meant by a real-time application.
	[41]
	[1]
(b)	An air conditioning system is a real-time application. Explain how sensors and actuators are used to control an air conditioning system in an apartment.
	[4]
(c)	Give one other example of a real-time application. Justify why your choice is a real-time application.
	Example
	Justification
	[2]

5	(a)	Des	scribe what is meant by the spooling of files.
			[2]
		•••••	اـــــــــــــــــــــــــــــــــــــ
	(b)	(i)	State why files which are sent to a shared printer on a local network will be spooled.
		(ii)	Explain how this spooling is carried out.
			[5]
			[5]

6	Describ	e the purpose of the following parts of a database management system (DBMS).	For Examiner's
	(i)	Data Description Language (DDL)	Use
		[2]	
	(ii)	Data Manipulation Language (DML)	
		[3]	
	State w	ular piece of data is 10010110. hat the data stands for if the data dictionary describes it as: a two's complement binary number;	
	()		
		[1]	
	(ii)	a sign and magnitude binary number;	
		[1]	
	(iii)	a binary coded decimal number.	
		[2]	

8	(a)	(i)	Explain the difference between static and dynamic implementation of data structures.	For Examiner's Use
			[2]	
		(ii)	Give one advantage and one disadvantage of storing a queue in an array rather than in a linked list.	
			Advantage	
			Disadvantage	
			[2]	
	(b)	(i)	Draw a diagram to show how the following members of a Computing class can be stored in a linked list in alphabetic order:	
			FRO, TSI, DON, ROS, BEV	

[5]

ii)	Describe an algorithm to insert a new member of the class into the correct position in the list.	
	[5]	

9	(a)	Explain the need for reverse Polish notation.
		[2]
	(b)	Show, with the aid of diagrams, how a stack is used to turn the reverse Polish expression
		ab+cde-*-
		into an expression in infix notation

[6]

10 A country has a national football competition based on leagues. Each LEAGUE has a number of TEAMs but each TEAM is only in one LEAGUE. Each TEAM plays at a number of GROUNDs during the season and each GROUND will host a number of TEAMs during the season. State the relationship between LEAGUE and TEAM. Draw the entity-relationship (E-R) diagram to show this relationship. [2] (ii) State the relationship between TEAM and GROUND. Draw the E-R diagram to show this relationship. [2] (iii) Explain how the relationship between TEAM and GROUND can be designed in third normal form.

11	(a)		cribe guage p			ences	betwe	een	interpre	etation	and	compi	lation	of	a I	high-le	evel
		•••••					•••••			•••••				•••••			[3]
	(b)	Des		how	the o				uses sp of the					nges	s d	uring	the
		/:\		A	ے جیالہ لے	- D:											
		(1)	Memo	ry A	aares	s Regi	ster (M	IAR)									
		(1)	Memo	ory A	aares 	s Kegi	ster (N	1AR)									
		(1)	Memo		aares 	s Kegi	ster (N	(IAR)									
		(1)	Memo														
		(1)	Memo														
			Memo														

12	A business uses the Internet to communicate with suppliers and to pay bills electronically. Discuss the problems of maintaining confidentiality of data on the Internet and techniques that can be used to address these problems.	For Examine Use
	[6]	

er's

BLANK PAGE

BLANK PAGE

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.

© UCLES 2011 9691/31/M/J/11