

**Asquith Girls High School**

# **Software Design and Development**

**HSC Year**

**Half Yearly Examination 2001**

**DIRECTIONS TO CANDIDATES**

Write your name on each page in the space provided

**Section I (16 marks)**

- 1 Attempt ALL questions
- 2 Mark the most appropriate answer on the answer sheet

**Section II (50 marks)**

1. Attempt ALL questions
2. Answer the questions in the space provided on the paper

Name: \_\_\_\_\_

Name: \_\_\_\_\_

## Section I

### Answer Sheet

Circle the most correct answer in each case

1.    A    B    C    D	9.    A    B    C    D
2.    A    B    C    D	10.   A    B    C    D
3.    A    B    C    D	11.   A    B    C    D
4.    A    B    C    D	12.   A    B    C    D
5.    A    B    C    D	13.   A    B    C    D
6.    A    B    C    D	14.   A    B    C    D
7.    A    B    C    D	15.   A    B    C    D
8.    A    B    C    D	16.   A    B    C    D

Name: \_\_\_\_\_

## Section I Multiple Choice

Circle the most correct answer on the answer sheet in each case

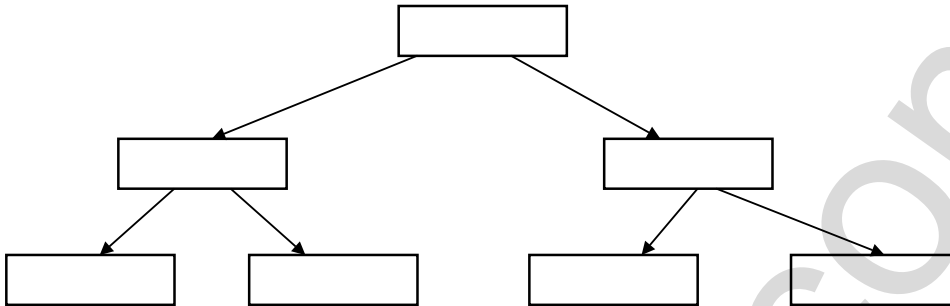
- 1 A standard sort technique where the minimum value is moved slowly to the left side of a list of numbers by swapping adjacent pairs of numbers is best described as:
  - (A) Ascending Insertion Sort
  - (B) Descending Insertion Sort
  - (C) Bubble Sort
  - (D) Selection Sort
  
- 2 Developing a software package for a large multinational company would be best achieved using
  - (A) End User approach
  - (B) Rapid Application Development
  - (C) Evolutionary Prototyping
  - (D) Structured Development
  
- 3 Modelling of a new system can use several techniques. These may include
  - (A) IPO diagrams, Storyboards, Algorithm flowcharts
  - (B) Storyboards, Prototyping, E-R diagrams
  - (C) IPO diagrams, Pseudocode, Prototyping
  - (D) Storyboards, Systems flowcharts, Screen Designs
  
- 4 A common technique used to help in the development of modules in programming is.
  - (A) prototyping
  - (B) stubs
  - (C) breakpoints
  - (D) logic
  
- 5 There are several constraints in determining feasibility of a system. These may include
  - (A) Budgetary and Operational
  - (B) Operational and Ethical
  - (C) Technical and Personal
  - (D) Scheduling and Variability
  
- 6 The two basic divisions of documentation are
  - (A) Internal and Intrinsic
  - (B) Internal and Variable
  - (C) Internal and External
  - (D) Internal and Process

Name: \_\_\_\_\_

- 7 To develop a graphical model of the system it would be best to use:**  
(A) System flowchart  
(B) Data flow diagram  
(C) IPO diagrams  
(D) Storyboards
- 8 EBNF and Railroad diagrams and two techniques used to:**  
(A) Describe syntax  
(B) Describe a language  
(C) Describe programs  
(D) Describe logic
- 9 Documentation for a user is most likely to include**  
(A) Process Diary  
(B) Technical manual  
(C) Tutorial  
(D) Intrinsic documentation
- 10 Which of the following best describes and array**  
(A) A group of elements holding data of different types  
(B) A group of elements holding data of the same type  
(C) A group of integers  
(D) A list of numbers
- 11 During the running of a program a "Division by Zero" error code appears. This is most likely to be**  
(A) Syntax error  
(B) Data error  
(C) Logic error  
(D) Run time error
- 12 Decompilation is usually a step in**  
(A) Plagiarism  
(B) Reverse Engineering  
(C) Networking  
(D) Authorship
- 13 Evaluation of a software product should include the results from**  
(A) User Interviews  
(B) Peer Checking  
(C) Test Data  
(D) Design Specifications

Name: \_\_\_\_\_

14 The diagram below represents a storyboard. What is the best description of this storyboard layout?



- (A) Linear
- (B) Composite
- (C) Hierarchical
- (D) Network

Consider the following algorithm for the next two questions

```
BEGIN
  Get value from user
  Set count to zero
  REPEAT
    Set square to count*count
    Display count
    Set count to count + 1
  UNTIL count >= value
END
```

15 This algorithm contains a repetition structure. This is

- (A) Pre test loop with counter
- (B) Post test loop with counter
- (C) Pre test loop without counter
- (D) Post test loop without counter

16 If value is entered as 3 the output from this algorithm will be

- (A) 0 1 2
- (B) 0 1 2 3
- (C) 0 1 4
- (D) 0 1 4 9

Name: \_\_\_\_\_

**Section II**

Answer each question in the space provided.

**Question 17 (8 marks)**

- (a) Draw a Gantt chart that documents the major milestones of a project you have completed. Include details specific to your project. **Marks**

**3**

- (b) Give TWO reasons why computer software is usually bought "off the shelf" rather than being outsourced or developed in house **2**

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- (c) Prototyping is one software development approach. Describe the type of project for which this is the most appropriate approach. **3**

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Name: \_\_\_\_\_

**Question 18 ( 20 marks)**

**Marks**

(a) The Bank of Darius wants to start using Internet banking. It plans to do this for non-business customers and then gradually implement the system for all customers.

(i) What type of implementation system should the bank use?

\_\_\_\_\_

**2**

(ii) What are the advantages to the bank of using this system?

\_\_\_\_\_

**3**

\_\_\_\_\_

\_\_\_\_\_

(b) The National Park Officers of Zarathustra are looking for software to help visitors identify and learn about the animals. They have decided to use a touch screen system where visitors can touch a section of a map and learn more about that area, or touch an animals photograph and learn more about the animal.

Your group has the task of doing the screen designs for the animal section. There are 25 main animals broken into four groups. Nocturnal, Diurnal, Herbivores and Carnivores.

(i) Draw a sample screen for the introduction to the animal section , showing links to the other screens and a return to the main menu

**3**

(ii) Draw a sample screen for the Diurnal section which has 6 sections (aquatic mammals, amphibians, insects, crustaceans, cephalopods and fish). Show links to other section of the site.

**3**

Name: \_\_\_\_\_

**Marks**

**(c) A licence agreement for a software package includes, in part, the following text.**

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5. This license is nontransferable.

6. You may not reverse engineer, decompile, disassemble, nor alter the Software.

**(i) Name the company involved**

\_\_\_\_\_

**(ii) Where is this license applicable?**

\_\_\_\_\_

**(iii) Explain the terms used in Point 6 of the Restrictions section**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**(iv) What does the Pendarvis company have to do if they want to run this software on their network?**

\_\_\_\_\_

\_\_\_\_\_

**1**

**1**

**4**

**3**



Name: \_\_\_\_\_

**Question 19 ( 10 marks)**

(d) The Fenris company wants to update some existing software. They have hired you to work with the code (which they originally bought several years ago) Marks

(i) What documentation will you find most useful?

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3

(ii) The code does not have very many comments. What problems could this cause?

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3

(iii) Describe some techniques which will make the code easy to understand and modify.

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4

Name: \_\_\_\_\_

**Question 20 ( 12 marks)**

**Marks**

(a) An amusement park ride requires that a rider be at least 120 cm tall OR weigh at least 45kg. A machine is installed at the ride entrance that automatically measures a person's height and weight. It displays a message 'Ride OK' or "No ride".

**3**

(i) Design a set of test data that will confirm that the machine is working correctly

Height	Weight	Expected Result

(ii) Write an algorithm for the machine using pseudocode

**Marks**

**4**

Name: \_\_\_\_\_

	<b>Marks</b>
<b>(b) A program is to be written so that when a user enters a line of text, it will count the number of times each letter appears in the text</b>	
<b>(i) What data type(s) should be used in this program</b>	<b>1</b>
<hr/>	
<b>(ii) Write an algorithm using a flowchart for this problem</b>	<b>4</b>