Higher Software Development - Section 1a **Name: _____**

1. List the stages involved in the development of a program in the correct order? **(7)**

_____

2. In the software development process, what happens at the analysis stage? **(2)**

_____

_____

3. When software is being produced for a company **who** is involved at the analysis stage? **(2)**

_____

4. Explain why the job of the systems analyst at the analysis phase in an iterative process **(2)**

_____

_____

5. What is a software specification and why is it so important? **(2)**

_____

_____

6. Identify the Personnel from the Job Descriptions **(5)**

Description	**Personnel**
They devise a project time schedule and make sure that all the deadlines for completion are met. The liaise with all staff to make sure everyone is clear about what they are doing and that progress is being met.	_____
Carries out un-biased comprehensive testing of the finished software.	_____
Creates the actual software code and may also have played a part in its design	_____
Commissions the software and specifies what they require the software to do	_____
Meets with the clients and discusses and documents their requirements. After a number of correspondences they will produce a detailed software specification that both parties are fully in agreement with.	_____

Higher Software Development - Section 1b Name: _____

1. Stepwise Refinement is one approach used in the design of software. Describe this process. **(2)**

   _____

   _____

2. What features should be considered at the design stage of the software development process? **(2)**

   _____

   _____

3. Name two methods of representing a program design and outline the main differences between them. **(4)**

   _____

   _____

4. Explain the following terms: **(3)**

   Fitness for purpose _____

   User interface _____

   Readability _____

5. Match the stage with the description of documentation given in the table **(7)**

   Design Evaluation Software Release Implementation Testing Maintenance Analysis

Description of Documentation	**Stage**
Sets of test data, sample output listings	
Version update history	
Software specification	
Structured program listing with internal commentary	
Technical guide and the User guide	
Pseudocode or structure diagrams, HCI screen designs	
Comments on fitness for purpose, HCI and areas for potential improvements for next version	

Higher Software Development - Section 1c **Name: _____**

1. Identify three types of documentation that should be written at the design stage **(3)**

2. A program has been written which will allow a teacher to enter a student's set of marks for five tests out of 50. It will calculate the average of these tests. Construct test data which will thoroughly test this program. Explain you why you have chosen each set of values. **(3)** **(6)**

3. Why is it unwise to leave testing until after the coding has been completed? **(3)**

4. What is the purpose of the User Guide **(2)**

5. What is the purpose of the Technical Guide **(2)**

Higher Software Development - Section 1d Name: _____

For each of the following descriptions of software maintenance required, choose **Corrective** **Adaptive** or **Perfective**

Description	
Software companies whose products were originally written for Windows XP had to carry out maintenance so that their software would run smoothly on Windows Vista.	_____
Recently Apple added some very polished and professional looking themed templates to its DVD software and overhauled its user interface.	_____
Due to popular demand, many video editing applications now provide added facilities to export productions directly to Youtube as well as burn to BluRay DVD.	_____
A 3D action game is not displaying its graphics properly on some models of graphic cards. The manufacturer of the software creates a free downloadable patch to fix this problem.	_____
When Adobe acquired Flash from Macromedia, they streamlined the user interface to have the same look and feel as other Adobe products like Photoshop and Illustrator as well as being able to import their files with layers intact. They also improved the functionality of the flash video importer.	_____
When Apple switched to Intel processors, software manufacturers had to carry out maintenance so that their software would run on the Intel chips.	_____
When Norton's Anti-Virus 2006 software was installed on a machine which already had another anti-virus product it would cause the system to freeze and crash. Norton had to resolve this issue promptly.	_____

Higher Software Development - Section 2a **Name: _____**

1. Machine code is an example of a low level language. State two difficulties in writing programs in machine code. (**2**)

_____

_____

2. What is a declarative language and how does it differ from a procedural language. **(3)**

_____

_____

_____

3. What would a text editor be used for? **(1)**

_____

4. Describe how applications are created using event driven languages. **(3)**

_____

_____

5. Outline the difference in the way compilers and interpreters translate high level program code into machine code. **(2)**

_____

_____

_____

6. Here is a piece of code written using Visual basic. Compare the number of times the Print statement is translated by a compiler and an interpreter. **(2)**

```
For times = 1 to 500
      Print “Welcome”
Next times
```

_____

_____

7. What is a macro and how can a macro be created? **(2)**

_____

_____

Higher Software Development - Section 2b Name: _____

1. Select True or False for each of the following statements -

Text editors are also known as development environments	**True**	**False**
Notepad is an example of text editor	**True**	**False**
Internet Explorer is an example of a text editor	**True**	**False**
Cut, copy and paste are features that are only available in some text editors	**True**	**False**
Text editors are common features of all development environments	**True**	**False**

2. Match the language type from the word list below with the description given.

Scripting **Event Driven** **Declarative** **Procedural**

Such languages are often associated with Artificial Intelligence. Programs Define knowledge bases consisting of facts and rules. Results are Obtained by submitting queries to the knowledge base _____

A means of coding short routines within an application package to customise its use. This allows complex and laborious tasks to be automated by initiating a user-defined routine _____

The most traditional form of programming where solutions are defined using lines of code in a set sequence with clear start and finish points. while the code can be modularised, there is still a set sequence of execution using a top down approach _____

A programming environment that makes it easy to build software applications with graphical user interface. The programmer draws the interface elements an code is attached to these. The code is initiated by a user event like clicking on a button or selecting from a menu. _____

Higher Software Development - Section 3a **Name: _____**

1. State suitable variable types for the following, the first one is done for you - **(5)**

   Name - string

   Age -

   Height -

   Car reg -

   50 Names -

   100 postcodes -

2. Clearly describe a fixed loop **(2)**

   _____

   _____

3. Clearly describe a conditional loop **(2)**

   _____

   _____

4. What is a nested loop? **(1)**

   _____

5. What is a pre-defined function? **(2)**

   _____

6. Give an example of a pre-defined function? **(2)**

   _____

7. A teacher is marking a set of exams. If a pupil's **results** are greater than **75%** they will be awarded a Grade A. Create the simple condition missing from the conditional statement below.

   If _____ then display "Grade A" **(2)**

8. Discount is only given if you go to the cinema on Monday or Wednesday, if you go any other day, there is no discount. Create the complex condition missing from the conditional statement below. **(3)**

   If _____ then

   "Discount given"

   Else

   "No discount given"

   End IF

Software Development - Section 3b **Name: _____**

1. For each of the following descriptions, choose Global or Local **(6)**

   A variable which needs to be available to every program module _____

   These types of variables should be kept to a minimum _____

   These variables are not recognised outwith the module in which they are used._____

   The value of these variables can be changed from anywhere in the program _____

   These variables are critical in bit software projects where several programmers contribute different modules _____

   Variables of the same name in different modules won't corrupt each other _____

2. Explain the difference between a global and local variable. **(2)**

   _____

   _____

3. Why is it preferable to use local variables than global variables? **(2)**

   _____

   _____

4. Explain how ***in and in/out*** parameter relate to ***By value*** and **By reference** parameters **(2)**

   _____

   _____

Higher Software Development - Section 4a Name: _____

Identify which algorithm describes, a Linear Search, Finding Maximum, Finding Minimum, Input Validation and Counting Occurences.

1._____

```
Get value
While value < given min or value > given max
Do
        Display error message
        Ask user to re-enter
        Get value
End while
```

2. _____

```
Set minimum to largest possible value
Loop for each item
        Get data item
        If data item < minimum then
                Set minimum to data item
        End if
End loop
Display minimum value
```

3._____

```
Set counter = 0
Loop for each item
        Get data item
        If data item = value being counted then
                Add 1 to counter
        End if
End loop
```

4. _____

```
Set maximum to smallest possible value
Loop for each item
        Get data item
        If data item > maximum then
                Set maximum to data item
        End if
End loop
Display maximum value
```

5. _____

```
Get item to be found
Set found = false
Loop for each item in list
        If data item = item to be found then
                Display position in list
                Set found = true
        End if
End loop
If found = false then display “Item not found”
```

Higher Software Development - Section 4b **Name: _____**

For each of the following programming situations, identify which algorithm would be used.
Choose from -

Input validation	-	IV
Finding minimum	-	FMIN
Finding maximum	-	FMAX
Counting occurrences	-	CO
Linear search	-	LS

Identifying the highest recorded temperature in a list of temperatures for the days of a month	
Identifying the finishing position of a competitor in the Tour de Caledonia cycle event from the list of finishers	
Getting the user to enter their lottery numbers	
Recording the number of silver cars from a list of employee car details	
Finding the youngest listed player of all the teams in a football World Cup Final	
Finding the percentage of pupils passing an exam from a list of their marks	
Identifying the best of 5 judge scores from 1 to 10 for an ice skating competitor	
Finding the number of months in the year that have exactly 30 days	
Getting judges to enter their scores from 1 to 10 for an ice skating competitor	
Identifying whether a certain pupil is on a schools daily absence list.	