LEVEL 4

OFFICE SOLUTIONS DEVELOPMENT

Student Guide

Modification History

Version	Date	Revision Description
V1.0	June 2011	For Release
V1.1	September 2019	Updated TQT

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1. Module Overview and Objectives

This unit provides the learner with the skills to develop advanced features of office software, and to employ and adapt them to support business functions.

2. Learning Outcomes and Assessment Criteria

Learning Outcomes; The Learner will:	**Assessment Criteria;** The Learner can:
1. Understand how application software can support business processes	1.1 Discuss ways in which application software can support business processes 1.2 Justify the use of different application software to support a given user requirement or business process 1.3 Discuss the importance of addressing both user and business requirements
2. Be able to design and implement office solutions	2.1 Design a solution to address a business or user need 2.2 Use advanced tools and techniques to implement a solution 2.3 Test a solution against expected results
3. Be able to demonstrate that business processes have been enhanced/improved	3.1 Discuss ways in which end-user engagement has taken place 3.2 Provide evidence that business processes have been enhanced/improved 3.3 Evaluate possible further improvements that could be made to enhance the system

3. Syllabus

Syllabus			
Topic No	Title	Proportion	Content
1	Application Software and Business Processes	1/12 1 hour of lectures 1 hour of tutorials 3 hours of seminars	• An introduction to the module • Types of business processes and functions • Application software defined • Types and range of application software • How application software supports business processes • Research examples of commercial software • Evaluate the role of applications software in specific business contexts • Case studies • Glossary ***Learning Outcome: 1***
2	An Introduction to End-User Software Development	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• End-user defined • Examine the need to address both user and business requirements • Interface defined • Identify interface design principles and good practice • Microsoft Office interface development • Case studies • Glossary ***Learning Outcome: 1***
3	An Introduction to the Advanced Features and Functions of the Microsoft Office Suite	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• An introduction to the Microsoft Office suite • An overview of advanced features and functions • How the above improve business performance • Consideration of both user and business requirements • Are interface design principles applied? • Glossary ***Learning Outcomes: 1 & 2***
4	Advanced Features and Functions of Microsoft Access, Excel and Word	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• An overview of advanced features and functions in Access • An overview of advanced features and functions in Excel • An overview of advanced features and functions in Word • Glossary ***Learning Outcome: 2***

5	An Introduction to VBA and Macros	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• Define what is meant by a macro • Define what is meant by VBA • Explain that there is a range of macros used for different purposes. • Describe the methods that can be used to develop macros • Explain the issues of macros and security • Use the Visual Basic Editor to create macros • Use the Record Macro feature • Save macros • Edit macros ***Learning Outcome: 2***
6	Using Macros in Microsoft Word	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• Develop macros • Edit macros • Use the Macro Recorder • Assign a macro to the keyboard • Assign a macro to a button • Format text or pictures using macros • Customise headers and footers using macros • Secure documents against malicious macros ***Learning Outcome: 2***
7	Using Macros in Microsoft Access	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• Create a macro in Microsoft Access • Understand key macro terms • Explain the sequence of macro production • Create Autoexec macros • Input data using a macro • Validate data using a macro • Filter and find records using a macro • Print records using a macro • Assign a macro to a command button • Navigate between forms and records using a macro • Run a query using a macro • Secure documents against malicious macros ***Learning Outcome: 2***

8	Using Macros in Microsoft Excel – 1	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• Create a macro in Microsoft Excel • Format titles, formulas and tables • Input dates and times • Input and select data using a macro • Provide data validation using a macro • Design message boxes and feedback • Design interactive user forms ***Learning Outcome: 2***
9	Using Macros in Microsoft Excel – 2	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• Create a macro that uses absolute cell references • Create a macro that uses relative cell references • Create an icon to run a macro • Print data using a macro • Secure documents against malicious macros ***Learning Outcome: 2***
10	Testing Software Development	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• The need for testing • Types of testing • The test plan • Determine expected test results • Record actual test results to enable comparison with expected results • Analyse actual test results against expected results to identify discrepancies • Investigate test discrepancies to identify and rectify their causes • Testing Checklist • Glossary ***Learning Outcome: 2***
11	Evaluating Software Development	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• Types of evaluation • Functionality evaluated • Efficiency evaluated • Reliability evaluated • Usability evaluated • Identify successful user interaction • Identify enhancements • Identify potential improvements • Evaluation Checklist • Glossary ***Learning Outcome: 3***

12	Combining End-User Software Development, Testing and Evaluation	1/12 1 hour of lectures 1 hour of tutorials 3 hours of laboratory sessions	• Topic Scenario • Identify business processes • Identify application software • Identify good practice in software interface design • Use advanced features and functions in Microsoft Excel and Word • Use macros in Microsoft Excel and Word • Produce a test plan • Produce an evaluation checklist ***Learning Outcomes: 1, 2 & 3***

4. Related National Occupational Standards

The UK National Occupational Standards describe the skills that professionals are expected to demonstrate in their jobs in order to carry them out effectively. They are developed by employers and this information can be helpful in explaining the practical skills that students have covered in this module.

Related National Occupational Standards (NOS)
Sector Subject Area: 6.1 ICT Professional Competence **Related NOS**: 4.6.A.1 – Contribute to human interaction and interface (HCI) design activities; 4.6.A.2 – Assist, under supervision, with the progress of human interaction and interface (HCI) design assignments; 4.6.P.1 – Prepare for human interaction and interface (HCI) design activities; 4.6.P.2 – Implement, under supervision, human interaction and interface (HCI) design activities; 4.6.P.3 – Manage the needs of different users of HCI design activities; 4.6.S.1 – Plan human interaction and interface (HCI) design activities; 5.1.A.1 – Carry out system development activities under direction; 5.1.P.1 – Perform systems development activities; 5.1.P.2 – Contribute to the management of systems development; 5.2.P.2 – Perform software development activities; 5.3.A.1 – Carry out IT/Technology solution testing activities under direction; 5.3.P.1 – Carry out IT/Technology solution testing.

5. Teaching and Learning

Suggested Learning Hours						
Guided Learning Hours				**Assessment**	**Private Study:**	**Total:**
Lectures:	**Tutorial:**	**Seminar:**	**Laboratory:**			
12	12	-	36	30 hours (assignment)	60 hours	150

The teacher-led time for this module is comprised of lectures, laboratory sessions and tutorials. You will need to bring this Student Guide to all classes for this module. The breakdown of the hours for each topic is given in the topic notes below.

5.1 Lectures

Your lecturer will be presenting the basic knowledge and the theoretical concepts required for the unit during this time. He/she will use PowerPoint slides during the lecture time and you will be expected to take notes.

You will also be encouraged to be active during this time and discuss and/or practice the concepts covered. Lectures will include question and answer elements to promote participation and to allow your lecturer to check whether you understand the concepts they are covering.

5.2 Tutorials

These are designed to deal with the questions arising from the lectures and private study sessions. You should think carefully beforehand about any areas in which you might need additional guidance and support and use this time to discuss these with your teacher.

5.3 Laboratory Sessions

During these sessions, you are required to work through practical tutorials and various exercises. The details of these are provided in this guide.

5.4 Private Study

This Student Guide also contains details of the private study exercises. You are expected to complete these exercises to improve your understanding. Your tutor will set deadlines for the completion of this work and go over the suggested answers with you. The deadlines will usually be before the scheduled tutorials for that topic. Some of the private study tasks may require you to work in a small group so you will need to plan your time carefully and ensure that you can meet with your group members to complete the work required before the deadline.

You should also use this time to revise the content of lectures to ensure understanding and conduct extra reading (using the supplementary textbooks or other materials available in the library or online). You should bring any questions to the tutorial for additional guidance and support.

6. Further Reading List

You will also be expected to undertake further reading to consolidate and extend your knowledge of the topics covered in this module. Your Accredited Partner Centre's library will contain a selection of useful sources of information. The list below also provides suggestions of suitable reference books you may like to use:

Beynon, D., Turner, P. and Turner, S. (2010). *Designing Interactive Systems: A Comprenhensive Guide to HCI and Interaction Design,* 2nd edition. Pearson Addison-Wesley Educational Publishers Inc.
ISBN-10: 0321435338
ISBN-13: 978-0321435330

Carroll, J. (2003). *HCI Models, Theories, and Frameworks: Toward a Multidisciplinary Science.* Morgan Kaufman.
ISBN-10: 1558608087
ISBN-13: 978-1558608085Chapra, S. (2009). *Introduction to VBA for Excel,* 2nd edition. Pearson.
ISBN-10: 013239667X
ISBN-13: 978-0132396677

Gonzalez, J., Meister, C., Ozgur, S., Dilworth, B., Troy, A. and Brandt, T. (2006). *Office VBA Macros You Can Use Today: Over 100 Amazing Ways to Automate Word, Excel, PowerPoint, Outlook & Access.* Holy Macro Press.
ISBN-10: 1932802061
ISBN-13: 978-1932802061

Jelen, B. and Syrstad. T. (2004). *VBA and Macros for Microsoft Excel*. Pearson QUE.
ISBN-10: 0789731290
ISBN-13: 978-0789731296

McFedries, P. (2008). Brilliant VBA for the 2007 Microsoft Office System. Pearson Prentice Hall.
ISBN-10: 0273715747
ISBN-13: 978-0273715740

Sharp, H., Rogers, Y. and Preece, J. (2007). *Interaction Design: Beyond Human-Computer Interaction, 2nd Edition*. John Wiley and Sons Ltd.
ISBN-10: 0470018666
ISBN-13: 978-0470018668

Walkenbach J. (2010). Excel VBA Programming for Dummies. 2nd Revised Edition. John Wiley and Sons Ltd.
ISBN-10: 0470503696
ISBN-13: 978-0470503690

7. Assessment

This module will be assessed by means of an assignment worth 100% of the total marks. These assessments will cover the learning outcomes and assessment criteria given above.

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Topic 1: **Application Software and Business Processes**

1.1 Learning Objectives

This topic provides an overview of how a wide range of application software supports various business processes and functions. On completion of the topic, you will be able to:

- Identify and discuss types of business processes and functions;
- Broadly define application software;
- List the range of application software available;
- Discuss how application software supports business processes and functions;
- Evaluate the role of applications software in business and describe how it can enhance and/or improve business processes and functions.

1.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

1.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1: Use of Application Software

Work with your group and discuss the following questions/tasks:

- List the types of application software (not brand names) that you have used.
- For what sort of tasks did you use it?
- Have you ever used bespoke application software and if so, for what purpose?

Exercise 2: Application Software Brands

Complete the table below inserting brand name/s for each example. Add as many examples as you can find for each one.

TYPE OF APPLICATION SOFTWARE	BRAND NAMES
Accounting	
CAD	
CAE	
CAL	
Database	
Data Mining	
Decision Making	
Desktop Publishing	
Email	

Graphics	
Presentation	
Project Management	
Simulation	
Spreadsheet	
Word Processing	

Exercise 3: Accounting Software

List the features and functions that efficient accounting software programs usually provide.

Exercise 4: Other Types of Application Software

Research the following terms and provide brief explanations and examples for each one:

1. Business Intelligence Software
2. Digital Dashboards
3. Enterprise software (also known as EAS: Enterprise Application Software)

1.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic. You will review your private study work with your lecturer and other students during the tutorial for this topic.

Exercise 1: Topic 1 Glossary

Complete the Topic 1 glossary by providing examples for each term:

TERM	MEANING	EXAMPLES
Application software	Programs that perform specific tasks, unlike system software that maintains the hardware, networks and utility software.	
Bespoke software	Programs that are written and/or modified for the exact requirements of companies and individuals. It is also referred to as custom or tailored software.	
Business processes and functions	Various tasks which are performed regularly by a business.	
Commercial software	Software that is already available to buy. Also referred to as 'off-the-shelf' software.	
Data mining software	Software that is used to find and store data, e.g. what people have bought from a particular website. This can be used to build a profile on their shopping habits for marketing purposes.	
Freeware	Software that is freely available, but copyrighted, so should not be sold to others.	
Integrated software	Several programs for different applications are provided in one 'package'; they share a common interface.	
Interface	In computing, it describes the boundary between the computer system and the user, and enables the user to communicate with the hardware and software.	

Logistics	In business, this describes the management of the flow of goods and/or services (also known as the supply chain).	
Operating system	A set of programs that control the operation of the hardware and application software on a computer system.	
Shareware	This software can be 'tried before you buy'.	
Simulation software	Software that enables the modelling of a real task, such as an experiment, without actually performing the real task.	
System software	A set of programs that control the operation of the hardware and application software on a computer system.	
Utility programs	Programs that enable the user to maintain their computer system so that it runs at its most efficient.	

Exercise 2: Bespoke Application Software Case Study

Look at the following websites:

- Paul Stanley Software: Bespoke Software Development: http://www.pssuk.com/BespokeSoftwareExamples.htm
- Aldex Software Ltd. Why Use Bespoke Software? http://www.aldex.co.uk/whycustom.html

1. Read through each of the examples shown on the Paul Stanley Software website.
2. Read through the advantages of bespoke software.
3. If you were manager of your own business, would the examples described on the Paul Stanley website convince you to purchase bespoke software or would you prefer to purchase commercial application software? Explain your reasons.

1.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the additional tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2: Use of Application Software by Various Organisations

1. Identify the business processes and functions of each of the following organisations:
    a. Governments
    b. Hospitals
    c. Legal firms
    d. Mail order companies
2. List what sort of application software you would expect each of them to use.

Topic 2: An Introduction to End-User Software Development

2.1 Learning Objectives

This topic provides an overview of the need to address both user and business requirements, which includes discussion of the of the end-user's role in developing application software and important features of interface design.

On completion of the topic, you will be able to:

- Discuss the need for application software to meet user and business requirements;
- Broadly define 'end-user' and 'end-user development';
- List the range of software tools available for end-users to use when developing software solutions;
- Identify the business processes that end-users can develop;
- Identify the benefits and disadvantages of end-user development;
- Discuss the need for analysis, design, testing and documentation;
- Identify end-user development guidelines;
- Discuss the importance of efficient interface design;
- Identify and discuss interface development in Microsoft Office.

2.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

2.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1: Improvements to Application Software Functions

Can you think of any features and/or functions (e.g. help features) that you have used in an application software package that you think could be improved?

In what ways could they be improved?

Exercise 2: Improvements to Business Processes

Which business processes do you think could be made easier and more efficient by end-user development?

Exercise 3: Software Display Design Elements

With reference to two application software packages that you use regularly, describe which of the software display design elements (see Topic 2 Slide 22) are included in each package, how effective you think they are, and how you think they could be improved. You may also make reference to the effectiveness or ineffectiveness of text, colour, image and sound.

2.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Exercise 1: Development of the Microsoft Office Interface and Functions

Using the Microsoft Office 2010 Suite, Version Comparison Guide and any other document(s) to which you have access, briefly describe the changes that have occurred in the three versions of the software (2003, 2007 and 2010) in the following areas:

- Analysis of large volumes of data
- Navigation
- Database creation and reports
- Interface changes

Exercise 2: The Microsoft Office Ribbon and the Accessibility Checker

Explain what is meant by the following:

1. The Ribbon in Microsoft Office

2. The Accessibility Checker in Microsoft Office

Exercise 3: Complete the Topic 2 Glossary by providing examples for each term:

TERM	MEANING	EXAMPLES
Check box	Also known as a tick box; it enables a user to select one or more options from several alternatives that are offered.	
Combination or 'combo' box	A combination of a drop down list and a list box. It contains a drop-down arrow that a user clicks to display a number of choices. It limits the choices that a user can make.	
Command button	A rectangular shape that if clicked on by a user, can be used to confirm a choice, cancel a choice or start another action.	
EUs	An end-user is a person who uses a computer system to undertake various tasks.	
EUD	End-user development is a process by which software is developed by end-users and not by programmers or technical experts.	

EUA	End-user application (EUA) refers to applications that are developed by end-users.	
HCI	Human Computer Interaction describes the ways in which users can interact with computer systems.	
Icon	A graphic image, usually of a simple picture or an object that is used to represent an action.	
List box	Enables a user to select one or more items contained in a box. An item is selected by clicking on it.	
Macro	Lines of code (instructions) that have been written to automate tasks that are performed regularly. They can be actioned by keyboard shortcuts, toolbar buttons or icons.	
Menu	A list of commands, usually displayed by dropping down the list of choices. A sub menu often appears when a main menu option is selected.	
Option or radio button	A user can select only one of a set of options by clicking on an associated button. When one button/option is clicked, all the other buttons/options are deselected. It limits the choice that a user can make.	
Scroll bar	A horizontal or vertical strip that has arrows at each end and enables information that does not fit onto the computer screen to be moved onto the screen into view.	
SMEs	Small to medium enterprises. In different parts of the world, a small sized business can employ less than 50 employees or less than 100 while a medium sized business can employ less than 250 or less than 500 employees.	
Text Box	A box that allows a user to enter text that is used by the software.	
Tool bar	A bar or several bars of icons, menus or buttons that can be displayed vertically and horizontally and can often be customised by a user.	
VBA	Visual Basic for Applications is a programming language that enables an end-user to automate instructions and functions that are used regularly in Microsoft Office applications, such as Access, Excel or Word.	

Exercise 4: Additional Reading

Visit the following websites to extend your understanding of the content covered in this topic. Make notes on anything you find interesting.

- GNOME: Interface Guidelines
  http://developer.gnome.org/hig-book/stable/

- Microsoft: Usability in Software Design
  http://msdn.microsoft.com/en-us/library/ms997577.aspx

- Usability First
  http://www.usabilityfirst.com/

2.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study Exercises

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2: Evaluating Effective End-User Development

What criteria (e.g. accuracy) could an end-user refer to when evaluating the effectiveness of his or her software solution?

Exercise 3: Planning a Software Development Task

Twenty staff members in a company earn different wages, but everyone has been given a £800 rise and also an increase of 3% of their current wage.

Produce a rough plan that outlines the stages of development in the creation of a spreadsheet that is required to analyse this data and calculate what each person earns after their wages have been increased.

Topic 3: **An Introduction to the Advanced Features and Functions of the Microsoft Office Suite**

3.1 Learning Objectives

This topic provides an overview of the advanced features and functions of the Microsoft Office Suite. On completion of the topic, you will be able to:

- Explain what applications are available in the Microsoft Office Suite;
- Describe what advanced features and functions are available in various applications;
- Describe how these features and functions improve business performance;
- Evaluate whether they address both user and business requirements;
- Evaluate whether interface design principles have been applied when using these functions.

3.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

3.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1: Advanced Features and Functions and Business Processes

List at least two business tasks that could be undertaken by using each of the following:

- PivotTables and charts
- Templates
- Conditional formatting
- Validation
- Logical functions

Exercise 2: Date and Time Functions in Excel

Open your spreadsheet package and enter some data as shown below:

	A	B	C	D
1	**Stationery Orders**			
2				
3	**January**			
4	**Item**	**Quantity**	**Price Per Item**	**Total Price**
5	Whiteboard Pen	23	£1.10	
6	Printer Paper (Box)	30	£10.00	
7	File Paper (Pack)	45	£6.42	
8	Staples (Box)	22	£2.50	
9	Stapler	2	£6.50	
10	Pen (Black)	38	£0.82	
11	Pen (Red)	16	£0.82	
12	Ring Binder	15	£2.50	
13				
14				
15				
16	**February**			
17	**Item**	**Quantity**	**Price Per Item**	**Total Price**
18	Whiteboard Pen	32	£1.20	
19	Printer Paper (Box)	34	£10.20	
20	File Paper (Pack)	48	£6.50	
21	Staples (Box)	32	£2.60	
22	Stapler	6	£6.50	
23	Pen (Black)	44	£0.90	
24	Pen (Red)	28	£0.90	
25	Ring Binder	21	£2.65	

Using the =Today( ), =Now() and AVERAGE functions

1. Click on cell C1 (the location where the results will be displayed)
2. Click on the Formulas icon
3. Choose the More Functions option from the drop down list
4. Select Today( )
5. Click OK.
6. A dialogue box is displayed, click OK.
7. Today's date should appear in cell C1.
8. When you click on cell C1, the complete function =TODAY( ) appears in the formula bar above the worksheet.
9. Add the following date and time functions in cell C1: =NOW( )
10. In C27, apply the AVERAGE function to the prices of all items ordered in January and February.

Exercise 3: Evaluating Interface Design

a. After using the functions in Exercise 2, do you think that their application could be improved by applying interface design elements, such as text, image, sound or colour?

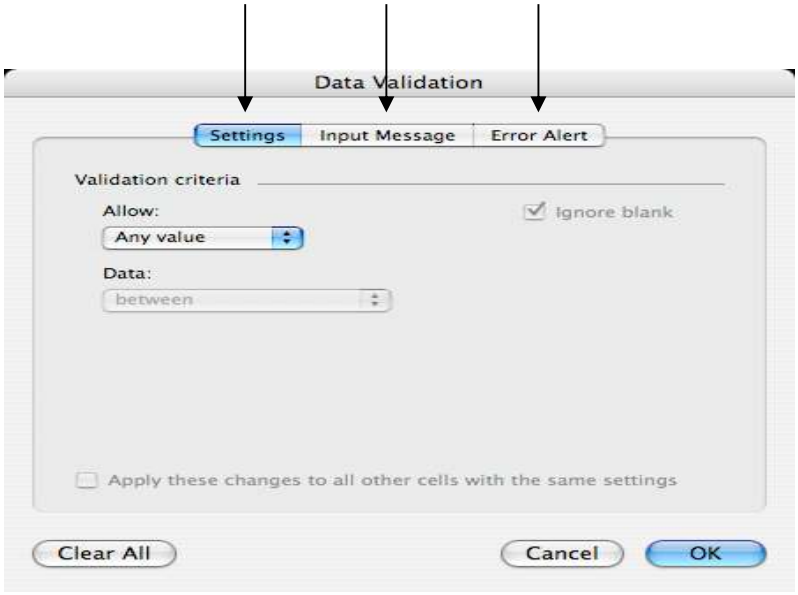
b. When developing functions such as data entry, how could the above interface design elements help the user?

Exercise 4: Data Entry and Validation

One of the most important features that you will be designing as an end user is appropriate help and data validation checks. It is vital that messages should:

- Prompt the user for their input
- Mention each step clearly in the proper sequence (e.g. do A, then B.)
- Provide feedback to the user
- Provide information or warnings on the consequences of the user's actions
- Display error messages
- State exactly what the user must do or what the problem is
- Keep your message brief but understandable

The data validation window in Excel contains three tabs as shown below.



Settings: This is where you define what sort of data is expected; any data that does not match the criteria you specify here is considered invalid.

Input Message: When the user clicks on your validated cell, the title and description you enter here will appear in a tooltip box. If the user needs to see any special instructions before entering data, include them here.

Error Alert: This is where you define the error message shown when Excel detects invalid data. The title and error message entered here will be shown in a pop-up error dialog; you need to make this message as informative as possible.

1. What sort of information and messages do you think need to be included to facilitate validation when a user does the following tasks? Give examples of each one.

Feature/Function	Settings	Input Messages	Error Alerts
Enters an amount into a spreadsheet			
Enters text into a spreadsheet			
Enters a name into a database			
Enters a postcode into a database			

Exercise 5: Evaluation of Elements of the Microsoft Office Interface

Think about when you have used various features and functions of Microsoft Word and have encountered the human computer interface elements as shown below. If you have not used an element, you can leave that section blank.

a. Explain what you have used each element for.

b. How effective did you found it? Was it easy to use and helpful?

Human Computer Interface Element	Comment
Ribbon	
Command buttons	
Text boxes	
List boxes	
Combination boxes	
Check boxes	
Option or radio buttons	
Online help	
Wizards	

Commands	
Icons	
Tabs	

3.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Exercise 1: Advanced Features and Functions Glossary

Create your own glossary of the terms used in Topic 4 in the format shown below. You can refer to the Microsoft website (http://office.microsoft.com) if you need further information, but try and explain each term in your own words:

TERM	MEANING	EXAMPLE OF USE
Advanced Queries		
Conditional Formatting		
Date and Time Functions		
Financial Functions		
Fluent User Interface		
Logical Functions		
Lookup Functions		
PivotTable		

Statistical Functions		
Text Functions		
User-Level Security		
Validation		

3.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2: User and Business Needs and Requirements

Which features and functions could help ensure that the following user and business needs and requirements are met?

1. Accuracy
2. Ease of use
3. Reliability
4. Security

Exercise 3

1. On Slide 22, you were presented with six types of features and functions that are used to improve office automation. Provide one specific example where each one could be used.
2. On Slide 23, you were presented with six types of features and functions that are used to improve information management and retrieval. Provide one specific example where each one could be used.
3. On Slide 24, you were presented with six types of features and functions that are used to improve decision support. Provide one specific example where each one could be used.

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Topic 4: **Advanced Features and Functions of Microsoft Access, Excel and Word**

4.1 Learning Objectives

This topic provides an overview of some of the advanced features and functions of Microsoft Access, Excel and Word. On completion of the topic, you will be able to:

- Recognise and use some of the advanced features and functions in Access;
- Recognise and use some of the advanced features and functions in Excel;
- Recognise and use some of the advanced features and functions in Word

4.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

4.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

4.3.1 LOOKUP

On Slides 12-14 of the Topic 4 lecture, we saw that the VLOOKUP function is used to return information based on data stored in a lookup table. It attempts to match a value to values in the first column (VLOOKUP) of first row (HLOOKUP) of the lookup table. If it finds the match, it returns the value.

The VLOOKUP function is structured as follows:

=VLOOKUP(lookup_value,table_array,col_index_num,range_lookup,FALSE)

Let's consider each of the terms in turn:

VLOOKUP	the value that you want to match in the table
table_array	the cell reference for the lookup table
col_index_num	the number of the column or row relative to the table that contains the values you want to be returned
range_lookup	informs Excel what to do if it cannot match the lookup_value.
FALSE	informs Excel to return an error value #N/A if the data cannot be matched.

It is good practice to sort the first column of the lookup table in ascending order for the VLOOKUP to work successfully.

Example:

A VLOOKUP table, based on the data in the following spreadsheet is required to match customer number 3711 with a product ID.

	A	B	C	D	E	F
1						
2						
3						
4	**Customer Number**	**Sales to Date**	**Region**	**Order Number**	**Product ID**	**Quantity**
5	1014	£6,321	3	1001	13-6655	5
6	1092	£3,591	3	1001	10-6025	10
7	1437	£2,970	2	1002	10-4430	5
8	1486	£3,752	2	1002	13-9672	7
9	1490	£1,850	1	1002	12-8390	3
10	1503	£1,300	1	1002	14-8417	3
11	1776	£1,457	1	1003	12-3167	3
12	1836	£3,796	3	1003	11-8994	6
13	1842	£12,561	3	1003	12-8478	8
14	1923	£4,555	3	1003	13-3251	9
15	2113	£1,251	2	1004	10-2562	8
16	2401	£1,865	1	1004	11-2235	7
17	2500	£6,792	1	1004	12-2587	10
18	2503	£7,040	2	1004	13-2869	7
19	2550	£1,206	2	1005	11-8771	7
20	2559	£2,501	2	1005	11-8994	6
21	2599	£2,396	3	1006	13-8261	8
22	2884	£4,790	2	1006	10-7381	4
23	2905	£4,221	3	1006	14-7321	30
24	3032	£2,586	2	1006	12-8521	12
25	3285	£8,506	3	1006	13-9672	5
26	3504	£2,208	2	1007	13-8309	10
27	3598	£3,220	1	1007	13-8713	8
28	3711	£4,497	1	1007	13-8971	5
29	3776	£3,446	1	1007	14-8613	5
30	3783	£5,251	2	1007	14-8515	20

If the formula =VLOOKUP(B1,A5:F30,5,FALSE) is entered into cell C2, the Product ID for customer 3711 is returned.

	A	B	C	D	E	F
1	**Customer Number**	3711				
2	**Product ID**		3-8971			
3						
4	**Customer Number**	**Sales to Date**	**Region**	**Order Number**	**Product ID**	**Quantity**
5	1014	£6,321	3	1001	13-6655	5
6	1092	£3,591	3	1001	10-6025	10
7	1437	£2,970	2	1002	10-4430	5
8	1486	£3,752	2	1002	13-9672	7
9	1490	£1,850	1	1002	12-8390	3
10	1503	£1,300	1	1002	14-8417	3
11	1776	£1,457	1	1003	12-3167	3
12	1836	£3,796	3	1003	11-8994	6
13	1842	£12,561	3	1003	12-8478	8
14	1923	£4,555	3	1003	13-3251	9
15	2113	£1,251	2	1004	10-2562	8
16	2401	£1,865	1	1004	11-2235	7
17	2500	£6,792	1	1004	12-2587	10
18	2503	£7,040	2	1004	13-2869	7
19	2550	£1,206	2	1005	11-8771	7
20	2559	£2,501	2	1005	11-8994	6
21	2599	£2,396	3	1006	13-8261	8
22	2884	£4,790	2	1006	10-7381	4
23	2905	£4,221	3	1006	14-7321	30
24	3032	£2,586	2	1006	12-8521	12
25	3285	£8,506	3	1006	13-9672	5
26	3504	£2,208	2	1007	13-8309	10
27	3598	£3,220	1	1007	13-8713	8
28	3711	£4,497	1	1007	13-8971	5
29	3776	£3,446	1	1007	14-8613	5
30	3783	£5,251	2	1007	14-8515	20

This function is very useful if there are several hundred records to search through.

Exercise 1: Customer Number and Quantity

1. Open a new spreadsheet and enter the data as shown.

2. Enter your name, student number and date in the footer and save your spreadsheet with the name Sales Data.

3. In Cell C2, use the VLOOKUP formula to match customer number 2884 with the quantity of items that they have ordered.

Exercise 2: Customer Number and Product ID

Using the same spreadsheet as in Exercise 1 above, use customer number 2614 and match it with a product ID.

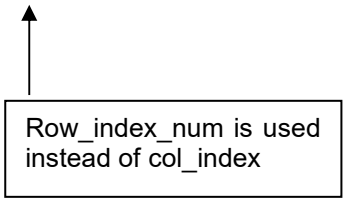
Exercise 3: Customer Number and Sales to Date

Using the same spreadsheet, enter the customer number 2113 and match it with the cost of their sales to date.

4.3.2 HLOOKUP

The HLOOKUP formula is very similar to the VLOOKUP formula, the difference being that data is matched to that in a row not a column. It is structured as follows:

=HLOOKUP(lookup_value,table_array,row_index_num,range_lookup,FALSE)



4.3.3 PivotTable

As stated in the lecture, a PivotTable enables a user to analyse large amounts of data, which can be sorted, counted and totalled.

Look at the following spreadsheet example, as illustrated on Topic 4 Slide 16:

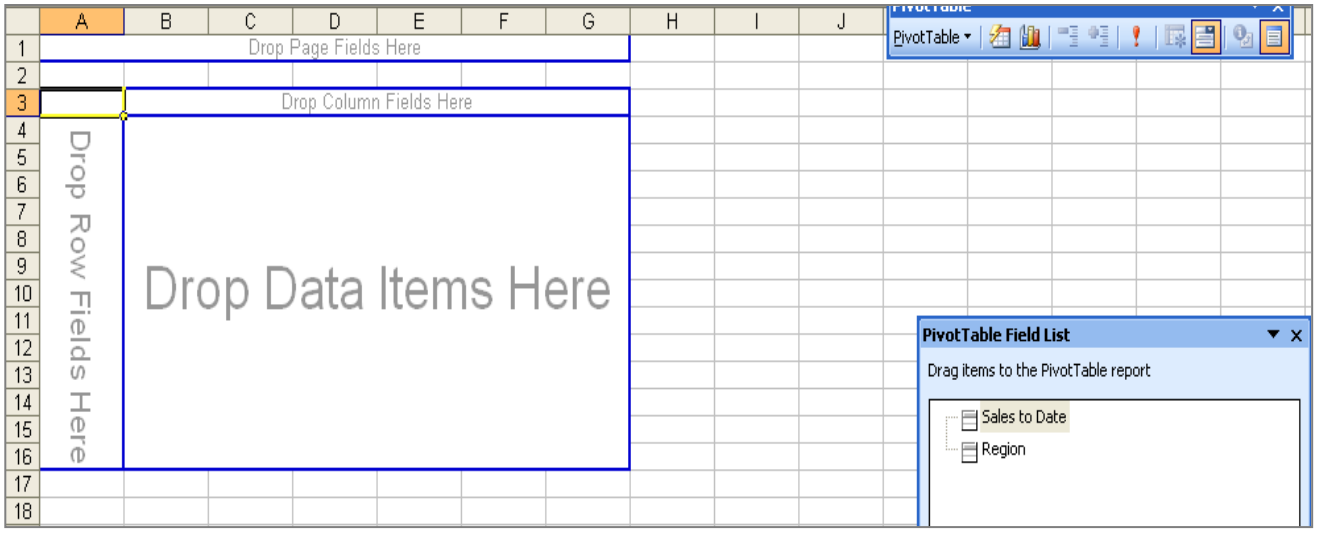
	A	B	C	D	E	F
1	Customer Number	Sales to Date	Region	Order Number	Product ID	Quantity
2	1014	£6,321	3	1001	13-6655	5
3	1092	£3,591	3	1001	10-6025	10
4	1437	£2,970	2	1002	10-4430	5
5	1486	£3,752	2	1002	13-9672	7
6	1490	£1,850	1	1002	12-8390	3
7	1503	£1,300	1	1002	14-8417	3
8	1776	£1,457	1	1003	12-3167	3
9	1836	£3,796	3	1003	11-8994	6
10	1842	£12,561	3	1003	12-8478	8
11	1923	£4,555	3	1003	13-3251	9
12	2113	£1,251	2	1004	10-2562	8
13	2401	£1,865	1	1004	11-2235	7
14	2500	£6,792	1	1004	12-2587	10
15	2503	£7,040	2	1004	13-2869	7
16	2550	£1,206	2	1005	11-8771	7
17	2559	£2,501	2	1005	11-8994	6
18	2599	£2,396	3	1006	13-8261	8
19	2884	£4,790	2	1006	10-7381	4
20	2905	£4,221	3	1006	14-7321	30
21	3032	£2,586	2	1006	12-8521	12
22	3285	£8,506	3	1006	13-9672	5
23	3504	£2,208	2	1007	13-8309	10
24	3598	£3,220	1	1007	13-8713	8
25	3711	£4,497	1	1007	13-8971	5
26	3776	£3,446	1	1007	14-8613	5
27	3783	£5,251	2	1007	14-8515	20
28	3853	£9,251	3	1007	14-8819	15
29	3854	£5,500	1	1023	10-9106	8
30	3885	£1,481	2	1023	12-3167	20

The following is a PivotTable produced from the above spreadsheet that displays the total sales for each region and the overall total of sales to date:

	A	B
1	Sales to Date	(All)
2		
3	Sum of Sales to Date	
4	Region	Total
5	1	29926.43
6	2	35035.43
7	3	57992.41
8	Grand Total	122954.27

A PivotTable can be produced as follows:

1. The range of cells that contain data that need to be used are selected.
2. Select the Data option.
3. Select the PivotTable and PivotChart Report from the Data option.
4. The PivotTable and PivotChart Report Wizard is then displayed.
5. Select the PivotTable option.
6. Confirm the data range.
7. Select the location of the PivotTable.
8. Select the Finish option.
9. The following is displayed:



10. To produce the PivotTable, drag the columns from the PivotTable Field List on the right side of the screen and drop them into one of the regions on the PivotTable. Excel updates the PivotTable as you add, rearrange or remove columns.
11. The main regions of a PivotTable are the *Data Items* and the *Column Fields*. The *Data Items* region refers to the fields that you want to subtotal and the numeric information is used to build averages and totals.
12. The *Column Fields* create groups and one column is added for each group, according to which field is chosen.
13. In this example, the two fields, *Sales to Date* and *Region* are ready to be placed on a PivotTable.
14. Drag *Region* and drop into the *Drop Row Fields* here in cell A4.
15. Drag the *Sales to Date* into cell A3.

Exercise 4: PivotTable

Produce the above PivotTable using the spreadsheet that you produced in Exercise 1.

Exercise 5: Product ID and Quantity

Using the same spreadsheet, produce a PivotTable that displays the Product ID and the Quantity.

Exercise 6: Customer Number and Sum of Sales to Date

Using the same spreadsheet, produce a PivotTable that displays the sales for each customer and an overall sales total.

Exercise 7: Mail Merge

Slides 19-22 of the lecture presented information on the mail merge feature. Follow the steps below to produce your own mail merge letters.

1. Open a new blank Word document and enter the following text:

Dear

As a valued customer, I would like to thank you for regularly buying our products. We value your support of our business.

We would also like to inform you that we are locating to a larger warehouse, which will enable us to be able to increase the products that we sell.

We will be moving at the end of October and our new postal address will be:

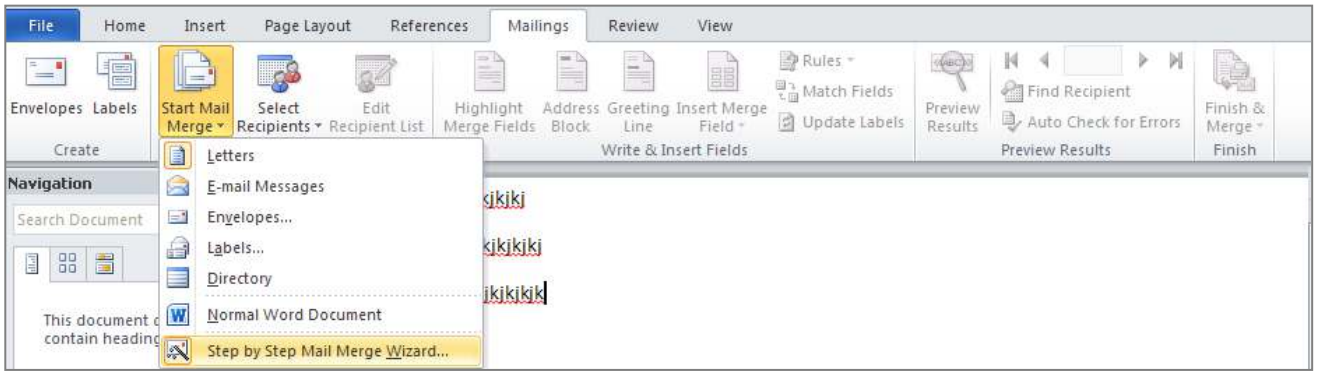
Honey For Sale
Beeside Lane
Beeston
UK
BE4 0BE

Our website and our email address will remain the same. I hope that you will continue to buy our high quality products.

Yours sincerely,

The Manager

2. Save your letter.
3. Choose the *Mailings* options from the Ribbon as shown below:



4. Select Start Mail Merge
5. Select Letters
6. Select Step by Step Mail Merge Wizard
7. Follow the instructions provided by the Mail Merge wizard
8. At the bottom of the task pane, Step 1 of 6 is displayed – select Next: Starting document
9. Select the Use the current document option and select Next: Select recipients.
10. Now you need to state from where the date for the mail merge should be taken - You can use a list of records that you have already created or create a new one.
11. If you want to create a new list, you should select Type a new list and then select the Create option.
12. A New Address List screen will be displayed on which you can enter details into a new list. You can customise this list if you want to, adding, deleting or renaming fields.

13. Enter the details of one person, select New Entry to clear the form and make a further nine entries.
14. When you have completed the last entry, click on the Close button.
15. You will then be asked to save the data file.
16. *The Mail Merge Recipients* screen will be displayed - this is a list of all the names and addresses that will appear on your letter. If you do not want a person's details to be displayed, click on a tick next to that person's details and their details will not be displayed.
17. Click on OK
18. You will then need to position the cursor in your letter where you want to insert a merge field, such as an address.
19. Select one of the three items, such as address.
20. Preview your letter.
21. Complete the mail merge (accept the preview of how the merge will look) and at this point you are ready to print one or however many of your letters that need to be printed.

4.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Exercise 1: VLOOKUP: Finding a student grade

Enter the following records into a blank spreadsheet.

	A	B	C	D
1				
2				
3				
4	**Subject**	**Student ID**	**Grade**	**Resit Exam**
5				
6	Computing Science	A123	49	Yes
7	Computing Science	A321	32	Yes
8	Computing Science	A132	92	No
9	Computing Science	A443	91	No
10	Computing Science	A555	56	No
11	Computing Science	A654	51	No
12	Computing Science	A432	72	No
13	Computing Science	B123	89	No
14	Computing Science	B321	83	No
15	Computing Science	B132	84	No
16	Computing Science	B443	57	No
17	Computing Science	B555	68	No
18	Computing Science	B654	54	No
19	Computing Science	B432	56	No
20	Computing Science	C123	59	No
21	Computing Science	C321	92	No
22	Computing Science	C132	74	No
23	Computing Science	C443	24	Yes
24	Computing Science	C555	87	No
25	Computing Science	C654	65	No
26	Computing Science	C432	58	No
27	Computing Science	D123	89	No
28	Computing Science	D321	81	No
29	Computing Science	D132	62	No
30	Computing Science	D443	87	No
31	Computing Science	D555	53	No
32	Computing Science	D654	35	Yes
33	Computing Science	D432	61	No
34	Computing Science	E456	58	No

1. Insert your name, student ID and the date in the footer and save your spreadsheet.

2. Produce a VLOOKUP to find the grade that Student C321 was awarded in Computing Science.

Exercise 2: Conditional Formatting

Using the same spreadsheet, apply conditional formatting that identifies three conditions:

- highlights all grades that are greater than 60
- highlights all grades between between 40 and 59
- highlights all grades less than 39

Exercise 3: Conditional formatting

Apply conditional formatting to column D to highlight all students who have to resit their exams.

Exercise 4:

Using the Grades spreadsheet, produce a PivotTable that displays how many students have to resit their exams and how many do not.

Exercise 5: Conditional Formatting the Sales Data Spreadsheet

Open your Sales Data spreadsheet

Apply conditional formatting that highlights all costs over £5,500.

Exercise 6: PivotChart

Using your Sales Data spreadsheet, produce a PivotChart that displays the total of sales in each region.

4.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2: Mail Merge Envelopes

Produce a set of mail merge envelopes. You do not need to print them; you can simply display one in print preview. Extract the addresses that they are to be sent to from the data file that you created in Exercise 4 of the laboratory session.

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Topic 5: An Introduction to VBA and Macros

5.1 Learning Objectives

This topic provides an overview of macros – what they can be used for, how they can be created and the role that VBA plays in their development. On completion of the topic, you will be able to:

- Define what is meant by a macro;
- Define what is meant by VBA;
- Explain that there is a range of macros used for different purposes;
- Describe the methods that can be used to develop macros;
- Explain the issues of macros and security;
- Use the Visual Basic Editor to create macros;
- Use the Record Macro feature;
- Save macros;
- Edit macros.

5.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

5.4 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1: Hello Macro

1. Open the Visual Basic Editor in Excel
2. Insert the following in the Code Window:

```
Sub hellomacro()
'Place the word Hello into cell A1'
Range("A1").Value = "Hello"
End Sub
```

3. Run the macro

Exercise 2: Running the Hello Macro from the Menu Bar

Run the Hello macro from the menu bar. This should produce the same 'hello' message as in Exercise 1.

Exercise 3: Adding Your Name to Your Worksheet

Create a macro that displays your name in cell A1 by entering the following code:

```
Sub MyNameMacro()
'This command will enter my name on the worksheet'
Range("A1").Value = "MyName"
End Sub
```

Exercise 4: A Macro that Displays Your Name and Subtracts Two Numbers

In Excel, create a macro that displays your name in cell A1 and also subtracts 56 from 84 with the answer in cell A4.

Exercise 5: Date Macro

In Excel, create a macro that displays today's date in cell A1.

You might need to format A1 to display the date in an appropriate format.

Exercise 6: Dates and Times

In Excel, create a macro using the following code:

```
Sub DatesTimesMacro()
MsgBox Now
MsgBox Date
```

```
MsgBox Time
MsgBox Day(Now)
MsgBox Month(Now)
MsgBox Hour(Now)
MsgBox Minute(Now)
End Sub
```

Run the macro and click each message box.

Exercise 7: Hello, Name, Multiplication and Date Macro

In Excel, create a macro that displays the message 'Hello' from <your name>, multiplies 5 by 10 and displays today's date.

Exercise 8: Interactive Message Box

In Excel, create the following macro:

```
Sub GetInput()
MyInput = InputBox("Enter your name")
MsgBox ("Hello ") & MyInput
End Sub
```

Run the macro and enter your name when prompted.

Exercise 9: Inserting Rows into a Spreadsheet

Create the macro below to display an input box that asks the user to define the number of rows required. The macro uses the range technique where a range is first selected and then subsequent rows are inserted.

```
Sub InsertRow()
  Dim Rng
  Rng = InputBox("Enter number of rows required.")
  Range(ActiveCell.Offset(0, 0), ActiveCell.Offset(Rng - 1, 0)).Select
  Selection.EntireRow.Insert
End Sub
```

Exercise 10: More Practice with a Message Box

Enter the following VBA code into the VB Editor:

```
Sub MyMessage()
   MsgBox "This macro is created by me"
   MsgBox "I am learning how to create macros", vbInformation
   MsgBox "I am mastering the technique!", vbExclamation, "My Notes"
End Sub
```

You might want to add more text to this macro.

Exercise 11: Offering the User Three Different Options

Enter the following code into the VB Editor and run it:

```
Option Explicit
'Message Box Syntax
'MsgBox(prompt[, buttons] [, title] [, helpfile, context])

Sub MsgBox_Static_Title_Msg()
   'Move to very top of Module To make it available to all Procedures within'
   'Use as Public Const strTitle As String = "Ozgrid.com" ‘
‘    ‘At the very top of any Public Module to make all Public and Private Procedures
   Const strTitle As String = "Ozgrid.com"
   Const strMsg As String = "How are you feeling Today?"

   'Run by placing cursor within Procedure & push F5
   MsgBox strMsg, vbOKOnly, strTitle
End Sub

Sub MsgBox_Mix_Look()
   'We can join looks and buttons by use of +
    'Run by placing cursor within Procedure & push F5
    MsgBox "Hello Subscribers", vbInformation + vbOKOnly
End Sub

Sub Msgbox_Capure_Reply()
   Dim lReply As Long

   'Run by placing cursor within Procedure & push F5
   lReply = MsgBox("Do you wish to continue.", vbYesNoCancel +  vbQuestion)

   Select Case lReply
      Case vbYes
        MsgBox "You chose Yes"
      Case vbNo
        MsgBox "You chose No"
      Case vbCancel
        MsgBox "You chose Cancel"
   End Select
End Sub
```

5.5 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

5.5.1 Record Macro Method

So far you have learned how to write simple macros. Another way to create macros is to use the Record Macro method.

Exercise 1: Format days of the week using the Record Macro method

1. Open a new worksheet in Excel and work through the following:
2. Click on cell A1.
3. Select: View > Macro > Record Macro
4. The *Record Macro* Dialogue box appears. In the Record Macro dialogue box:
    - Enter Macro Name = DaysoftheWeek
    - Enter Short cut = *Ctrl + d*
    - Store Macro In = Personal Macro Book
    - Click OK
5. Click the Relative Reference button on the Record Macro toolbar.
6. Enter Monday in A1.
7. Use the fill handle to drag across 6 cells.
8. Select: Format > Cells
9. Select the Alignment tab.
    - Horizontal & Vertical alignment = Center
    - Orientation = 90 degrees
10. Select the Font tab. Font = Bold, 12
11. Select the Border tabs.
    - Click between each Text block to place vertical lines between cells.
    - Click OK
12. In cell A2 then press Ctrl+d

Exercise 2: Months of the Year

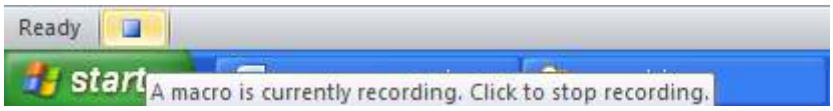
Using the Record Macro Method in Excel, format the months of the year using alignment, shading, font and one other format of your choice.

Exercise 3: Use a Macro to Change Font Style and Size in Word

1. Open an existing word document.
2. Highlight some text
3. Select View > Macro > Record Macro
4. Select Record Macro
5. There are four sections in the Record Macro dialogue box:

- Macro Name
- Assign macro to
- Store macro in
- Description

6. Enter the macro name as ChangeFontDetails.
7. We will assign Word macros to the toolbar and the keyboard in Topic 6.
8. Your macro will now be recording.
9. Select *Format*
10. Select *Font*
11. Select *Arial*
12. Select *Italic*
13. Select size *11*
14. Click OK
15. You are returned to the page.
16. Stop the Macro Recorder.



17. To use the new macro, do the following:
18. Open another file and highlight some text.
19. Select: View > Macro > View Macros
20. Select the macro from the Macros dialogue box.
21. Select *Run*
22. The text will be updated.

Exercise 4: Record a Macro in Word using Three Formatting Features

Open an existing Word document and record a macro that includes three formatting features.

5.6 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2: Macro Recording and Macro Writing

You have used the Macro Recorder and you have also written macros in the VB Editor. Which method did you find the easiest and why? What do you think could help you familiarise yourself with these methods?

Exercise 3: Macros and Security

Why is it so important that you are aware of the issues of macros and security?

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Topic 6: **Using Macros in Microsoft Word**

6.1 Learning Objectives

This topic provides an overview of what macros can be used for in Microsoft Word and how to create and execute them. On completion of the topic, you will be able to:

- Create a macro in Microsoft Word;
- Assign a macro to the keyboard;
- Assign a macro to a button;
- Format text or pictures using a macro;
- Customise headers and footers using a macro;
- Secure your documents against malicious macros.

6.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

6.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1

1. Open a new document in Microsoft Word and enter the following text (using font Times New Roman size 12):

> **Global Awareness**
>
> You are asked to provide certain information on your own country, one European country and a country outside Europe. Research the following topics and provide the necessary information in order for a clear comparison to be made between your country and the two countries of your choice:
>
> 1. The number of people living in each country and the number of people under twenty five and over 65.
> 2. The main industries and the main products imported and exported.
> 3. When do people start and finish school and what type of education exists after people leave school?
> 4. Employment and unemployment figures.
> 5. How many people (approximately) are employed in Information Technology?
> 6. The main sporting activities of the population.
> 7. The types of music enjoyed by the population.
> 8. The number of Internet users.
> 9. The number of households that have a computer.
> 10. The amount of waste produced per person, per year.
> 11. The amount of money spent on health care for each person.
> 12. What is the minimum voting age?
>
> Word process your answers and present them professionally providing any Web page references, pictures and diagrams.

2. Save your file.
3. Use the Macro Recorder to create the macros for the following exercises.

Exercise 2: Formatting Text

a. Select the first paragraph and create a macro that can be used in this document only, to change the font style to Arial, size 12.

b. Test that the macro works by running it and then using it to change the font style and size in the rest of the document

Exercise 3: Formatting Text 2

a. Select the last sentence and create a macro that can be used in this document only, to format the text so that it is highlighted.

b. Test that the macro works by running it and then selecting another question and running the macro.

Exercise 4: Upper-case and Lower-case Text

Select two sentences and create a macro that can be used in this document only to change all lower-case text to upper-case text and apply it to the keyboard. Test that it works.

Exercise 5: Bulleted List

Select all the questions and create a macro that can be used in this document only to make a bulleted list in the format of your choice. Assign this macro to the toolbar and test that it works.

Exercise 6: Customising Footers and Assigning a Macro to the Keyboard

Create a macro that can be used in all Word documents to customise the footers of each document with your name, student number and date, and assign the macro to the keyboard. Test that it works.

Exercise 7: Applying a Macro to the Toolbar

Create a macro that can be used in all Word documents to underline titles. Apply it to the toolbar and test that it works.

Exercise 8: Printing a Document

Create a macro that can print this document. Test that it works.

Exercise 9: Using Macros to Improve a Document

a. Read through the extract below and identify where macros could be used to make the production of features of the document/future documents more efficient (there are at least six examples).

b. Produce each of the macros that you have identified in part (a). You should word process the extract and use it to test that each of your macros work.

c. Print a copy of the VBA code of each one of your macros. Ensure that your name and student number is entered on your work.

Digital Graphics Course

Bitmap/Raster Graphics and Vector Graphics and File Formats

A *bitmap/raster* image is a *digital* image which consists of dots or *pixels*. The range of colours available for each pixel in the image varies depending on the image and can be adjusted to determine the look of the image. The dimensions or number of dots in an image can also determine the quality of the image. Common raster file formats include windows Bitmap (*.bmp*), Graphic Interchange Format (*.gif*), Joint Photographic Experts Group (*.jpg*), Tagged Image File Format (*.tif*) and Portable Network Graphic (*.png*). Some common raster graphic editing applications include *Photoshop*, *Fireworks*, *Corel Paint Shop*.

A *vector* image is made up of geometric objects such as lines, curves and polygons. Many vector image formats are specific to certain vector image editing applications such as *Illustrator* (.ai) and *Corel Draw* (.cdr). Some applications, such as *Flash*, also rely heavily on vector graphics.

The following table summarises some of the differences between raster and vector graphics:

Raster Graphics	Vector Graphics
• Good for complex artwork and realistic images such as photos	• Good for simpler artwork such as diagrams and logos
• Large file sizes since information is stored about thousands of pixels	• Smaller file sizes as only information about several shapes is being stored
• More complex to edit	• Can be simpler to edit
• Quality can decrease with resizing and editing	• Quality not affected by resizing and editing
• Common on the web	• Common on the web in Flash animation

Some raster image editing applications, such as Photoshop, also allow for limited vector editing. However, for anything more than just basic vector editing, it is better to use a more suitable application, such as Illustrator.

Page 1 of 3

6.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Exercise 1: Macros and Microsoft Word

Access http://office.microsoft.com and enter the following into the search bar: 'macros and Word 2003' (if you are using Microsoft Office 2003) **or** 'macros and Word 2007' (if you are using Microsoft Office 2007) or 'macros and Word 2010' (if you are using Microsoft Office 2010). Read the following articles and try the tasks described:

Troubleshoot recording and running macros:

- About macros
- Macros demystified: What they are and why to use them
- Delete macros
- Get to know macros: A guide
- Macro security levels
- Rename macros
- Troubleshoot macro security and warnings
- Copy macros to another document or template
- Modify the list of trusted publishers for macros
- About macros in South Asian documents
- Automate your form
- Edit a macro

Exercise 2: Macros and Security

Read over the following on macros and security:

- http://www.msoffice-tutorial.com/macro-security.php
- http://searchsecurity.techtarget.com/definition/digital-signature

Ensure that you understand the following terms as you will be asked to explain them in the tutorial:

a. Malicious macro

b. Digital signatures

c. Digital signing

6.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2: Macros and Security

Explain the terms:

- Malicious macro
- Digital signature
- Digital signing

Topic 7: Using Macros in Microsoft Access

7.1 Learning Objectives

This topic provides an overview of how macros can be used in Microsoft Access and how to create and execute them. On completion of the topic, you will be able to:

- Create a macro in Microsoft Access;
- Understand key macro terms;
- Explain the sequence of macro production;
- Create Autoexec macros;
- Input data using a macro;
- Validate data using a macro;
- Filter and find fields and records using a macro;
- Print records using a macro;
- Assign a macro to a command button;
- Navigate between forms and records using a macro;
- Run a query using a macro;
- Secure documents against malicious macros.

7.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

7.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1: The Macro Designer Interface

Familiarise yourself with the Macro Designer interface by looking at each section.

- List eight actions
- List four objects
- List two user interface actions
- List two data entry operation actions

Exercise 2: Planning a Macro

Write down the stages in creating a data entry macro.

Exercise 3: Enabling Data Entry

Using a database that you have already created, develop a macro that can be used to enable data entry and validate the data entry. Test it and ensure that it works.

Exercise 4: Message Box

Create a message box that can be displayed when a user is entering data. Test it and ensure that it works

Exercise 5: Printing Records

Using a database that you have already created, develop a macro that can be used to print records. Test it and ensure that it works.

Exercise 6: Running a Query

Using a database that you have already created, develop a macro that can be used to run a query. Test it and ensure that it works.

Exercise 7: Developing Macros in a Music Database

Create a database that contains details of your favourite music. You need to enter a minimum of twenty records/tracks and the following fields must be completed for each one:

- Name of the Performer
- Title
- Duration
- Year of Release
- Genre

Create macros that automate the following tasks in your database:

a. Order the artist titles alphabetically

b. Validate data entry

c. Generate a query that finds details of rock music released before 2010.

d. Generate a report of the above query

7.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Exercise 1: Autoexec Macro

Using a database that you have already created, develop an Autoexec macro.

Exercise 2: Assigning Macros to a Command Button

Assign one of the macros that you have created previously to a command button.

Exercise 3: Additional Reading

Read the following information by Microsoft on developing macros in Office Access 2007 and take notes any important points:

- Microsoft (2011). *Introduction to Macros.* [Available Online] http://office.microsoft.com/en-us/access-help/introduction-to-macros-HA001214202.aspx?CTT=3
- Microsoft (2011). *Create a Macro.* [Available Online] http://office.microsoft.com/en-us/access-help/create-a-macro-HA010030811.aspx

You may wish to read a different version of these articles, depending on which software version you are using.

Read the following information by Microsoft on changes in Office Access 2010:

- Microsoft (2011). Changes in Access 2010. [Available Online] http://technet.microsoft.com/en-us/library/cc179181.aspx

Read the following information on Microsoft Access:

- Accessible Data Solutions (2011). Macro Designer for 2011. [Available Online] http://www.accessibledatasolutions.com/articles10/macrovba.htm

Exercise 5: Glossary

Complete the Topic 7 glossary by providing the meanings of the terms and give examples of each:

TERM	MEANING	EXAMPLE
Action		

Argument		
Autoexec Macro		
Condition		
Event		
Event Property		
Filter		
Find		
Macro Data		
Macro Designer		
Macro Group		
Object		
Query		

7.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2: Securing an Access Database

Provide screenshot evidence that you have secured your Access database against malicious macros.

Topic 8: **Using Macros in Microsoft Excel – Part 1**

8.1 Learning Objectives

This topic provides an overview of how macros can be used in Microsoft Excel and how to create and execute them. On completion of the topic, you will be able to:

- Create a macro in Microsoft Excel;
- Format titles, formulas and tables;
- Input dates and times;
- Input and select data using a macro;
- Provide data validation using a macro;
- Design message boxes and feedback;
- Design interactive user forms.

8.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

8.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1: Formatting Titles and Formulas

Develop a macro to format titles and formulas, as shown on slides 14-16, and enter the data as shown on Slide 15 into a spreadsheet before you develop the macro.

Exercise 2: Formatting a Table

Open a spreadsheet that contains a table. Develop a macro that formats the colour, font and border style of the table. Assign it to short cut keys and save it in your Personal Macro Book. Test to check that it works on another table in another spreadsheet.

Exercise 3: Displaying the Date on any Open Spreadsheet

Open a new spreadsheet and create a macro that displays the *current* date in this or any other spreadsheet that you open. Test it to ensure that it works.

Exercise 4: Data Entry

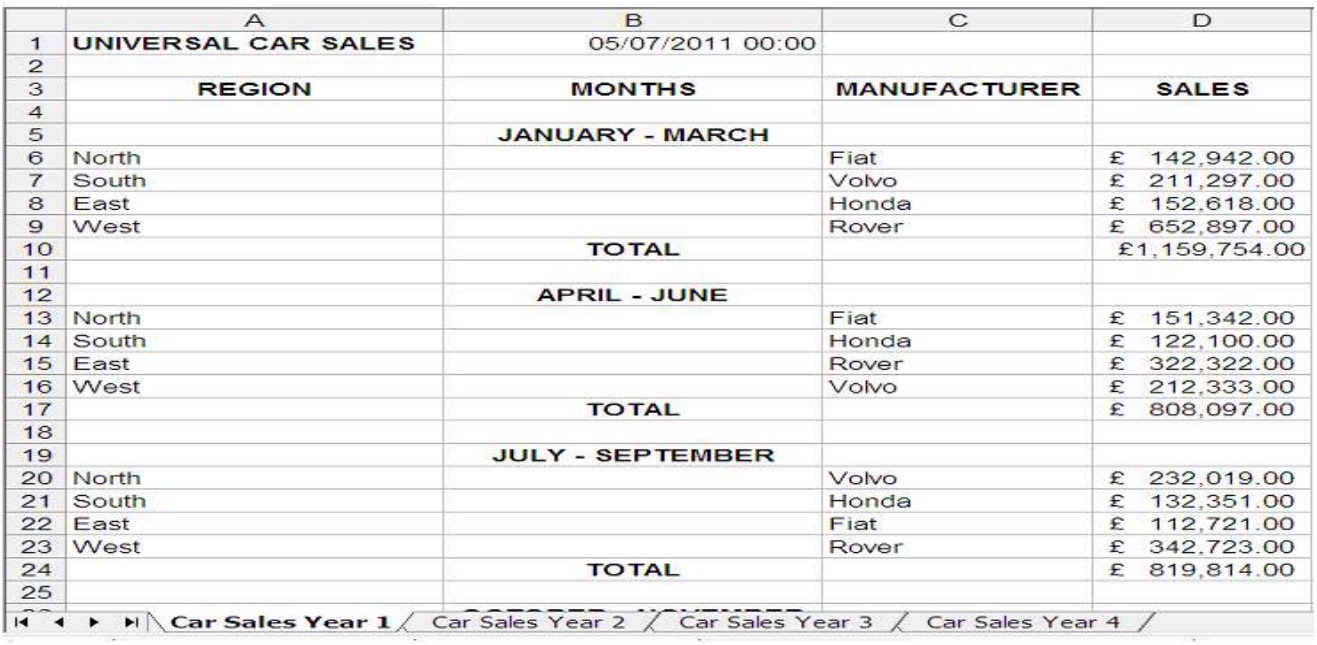
Create a macro that displays a dialogue book that asks the user to input their age. Test it to ensure that it works.

Exercise 5: Message Boxes and Feedback

Develop a macro that that displays a message box similar to the one illustrated on Slide 22 and using code similar to that displayed on Slide 23.

Exercise 6: Using Macros to Improve a Spreadsheet

a. Look at the following spreadsheet and identify where macros could be used to make the production of features of the spreadsheet/future spreadsheets more efficient (there are at least six examples).



	A	B	C	D
1	UNIVERSAL CAR SALES	05/07/2011 00:00		
2				
3	REGION	MONTHS	MANUFACTURER	SALES
4				
5		JANUARY - MARCH		
6	North		Fiat	£ 142,942.00
7	South		Volvo	£ 211,297.00
8	East		Honda	£ 152,618.00
9	West		Rover	£ 652,897.00
10		TOTAL		£1,159,754.00
11				
12		APRIL - JUNE		
13	North		Fiat	£ 151,342.00
14	South		Honda	£ 122,100.00
15	East		Rover	£ 322,322.00
16	West		Volvo	£ 212,333.00
17		TOTAL		£ 808,097.00
18				
19		JULY - SEPTEMBER		
20	North		Volvo	£ 232,019.00
21	South		Honda	£ 132,351.00
22	East		Fiat	£ 112,721.00
23	West		Rover	£ 342,723.00
24		TOTAL		£ 819,814.00
25				

Car Sales Year 1 | Car Sales Year 2 | Car Sales Year 3 | Car Sales Year 4

b. Produce each of the macros that you have identified in Question (a). You should produce the spreadsheet and use it to test that each of your macros work.

c. Print a copy of the VBA code of each one of your macros. Ensure that your name and student number appear on your work.

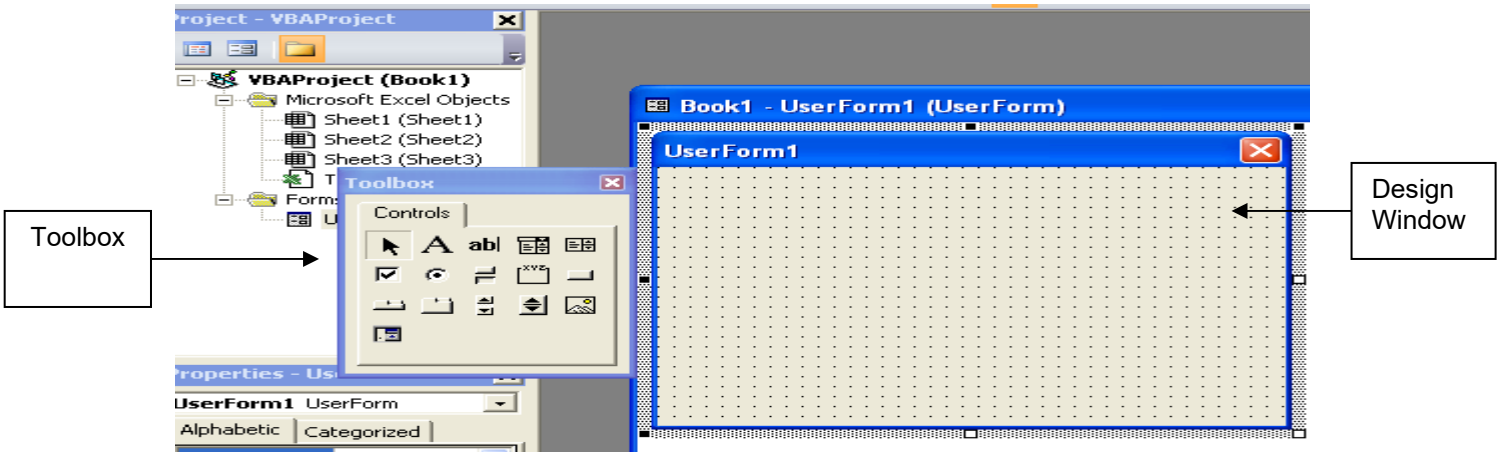
8.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

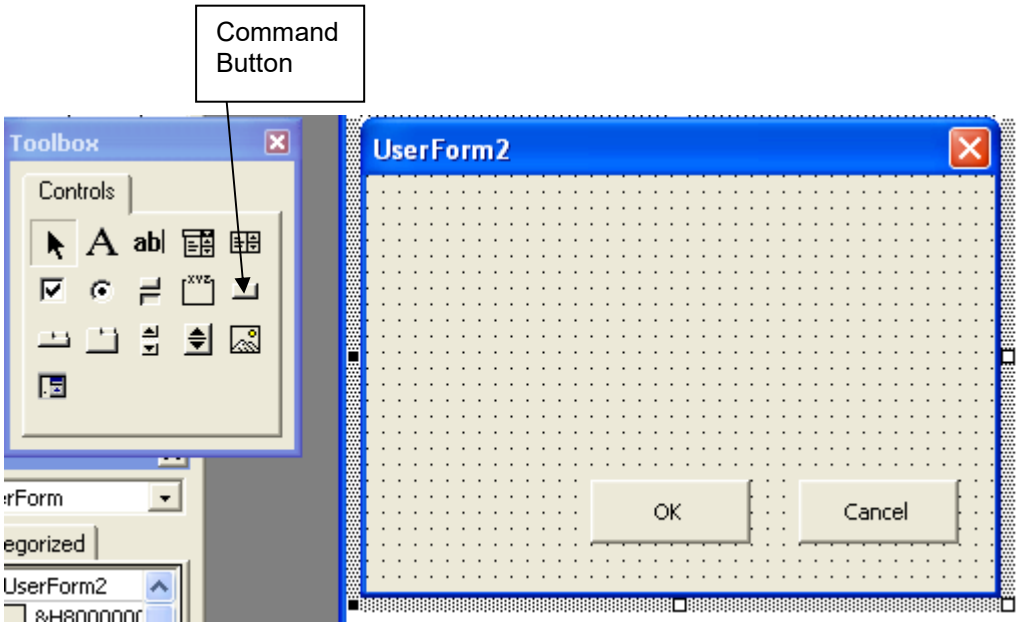
Exercise 1: User Form Notes

We have allowed users to enter simple text strings so far. The User Form allows much more complex user interfaces to be built which are similar to those presented by the Microsoft tools. The following example displays a list of options to the user (using a List Box) and adds Cancel and OK buttons so that the user can exit the form.

1. Open the VB Editor
2. Select *Insert* > *UserForm.* The following will be displayed:



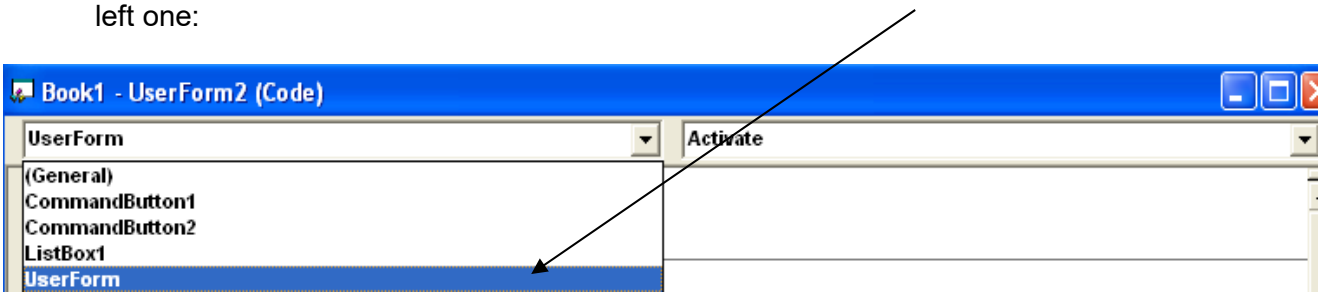
3. If you move the mouse pointer around the toolbox, a description will appear when the mouse pointer is paused over an icon.
4. Locate the CommandButton control. Drag and drop it onto the Design window.



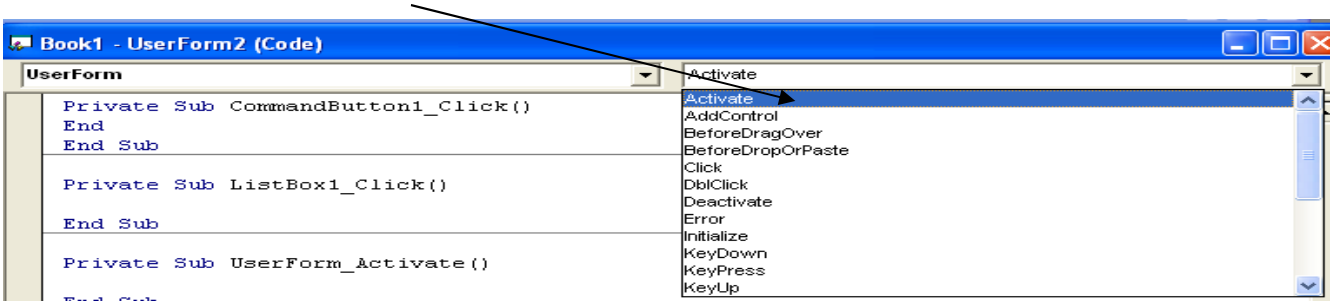
5. Enter OK in the left button and Cancel in the right one.
6. Select a List Box from the toolbox. Drag and drop it onto the Design window.
7. In order to display options to the user via the list box, code has to be written and so the code window needs to be opened. Select the Cancel button, open the Code window and enter the following code:

```
Private Sub CommandButton1_Click()
End
End Sub
```

8. Test by pressing the F5 key. The user form should be displayed along with the two buttons. If Cancel is clicked, you will exit.
9. Options now need to be added to the List Box. The AddItem command is used for this. In the Two drop down lists are available at the top of the Code window. Select *UserForm* from the left one:



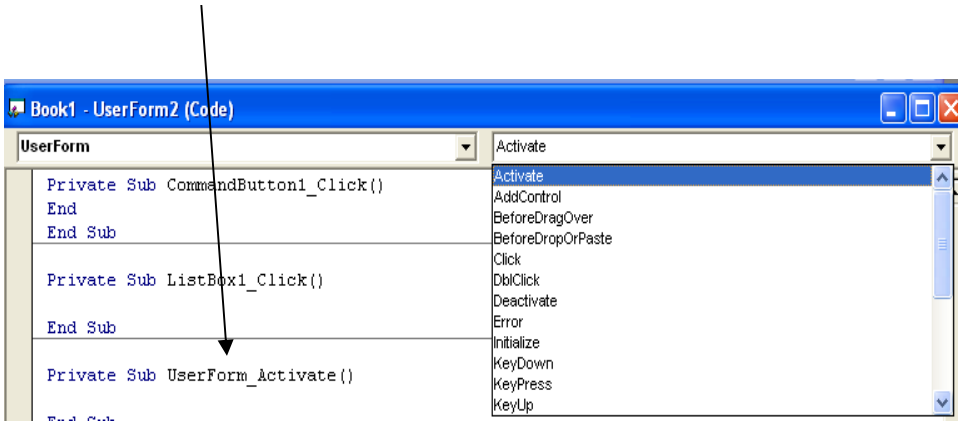
10. Next select *Activate Event*:



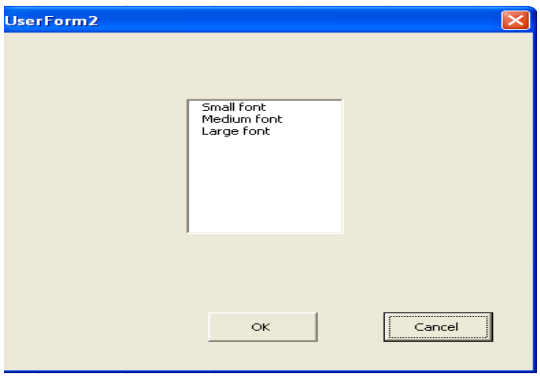
11. Type the following code into the View window:

```
Private Sub UserForm_Activate()
ListBox1.AddItem ("Small font")
```

```
ListBox1.AddItem ("Medium font")
ListBox1.AddItem ("Large font")
End Sub
```



12. Press the F5 key and the following should be displayed:



13. Code must now be written that enables a response when the user selects an option in the list box and clicks the OK button. The code should make the font of the current cell small, medium or large, depending on the user's choice.
14. This code is written for the OK Button and checks to see which option has been clicked and changes the font size
15. The following code is entered:

```
Private Sub CommandButton2_Click()
If ListBox1.ListIndex = 0 Then Selection.Font.Size = 10
If ListBox1.ListIndex = 1 Then Selection.Font.Size = 14
If ListBox1.ListIndex = 2 Then Selection.Font.Size = 16
End
End Sub
```

16. This can be tested by pressing the F5 key and testing each of the options.

Exercise 2: User Forms with a List Box

Create a user form with a list box that offers a user five font size options to choose from and displays three command buttons that when clicked on, work.

Exercise 3: User Forms with a Combo Box

Create a user form with a combo box that offers a user five font size options to choose from and displays three command buttons that when clicked on, work.

8.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2: Macro Development

List the macros that you think that could be developed to enable efficient use of the following spreadsheet:

	A	B	C	D	E	F	G
1	Customer Number	Sales to Date	Region	Order Number	Product ID	Quantity	Customer Paid?
2	1014	£6,321	3	1001	13-6655	5	Y
3	1092	£3,591	3	1001	10-6025	10	Y
4	1437	£2,970	2	1002	10-4430	5	Y
5	1486	£3,752	2	1002	13-9672	7	Y
6	1490	£1,850	1	1002	12-8390	3	Y
7	1503	£1,300	1	1002	14-8417	3	Y
8	1776	£1,457	1	1003	12-3167	3	Y
9	1836	£3,796	3	1003	11-8994	6	Y
10	1842	£12,561	3	1003	12-8478	8	N
11	1923	£4,555	3	1003	13-3251	9	Y
12	2113	£1,251	2	1004	10-2562	8	Y
13	2401	£1,865	1	1004	11-2235	7	Y
14	2500	£6,792	1	1004	12-2587	10	Y
15	2503	£7,040	2	1004	13-2869	7	Y
16	2550	£1,206	2	1005	11-8771	7	N
17	2559	£2,501	2	1005	11-8994	6	N
18	2599	£2,396	3	1006	13-8261	8	Y
19	2884	£4,790	2	1006	10-7381	4	Y
20	2905	£4,221	3	1006	14-7321	30	N
21	3032	£2,586	2	1006	12-8521	12	N
22	3285	£8,506	3	1006	13-9672	5	Y
23	3504	£2,208	2	1007	13-8309	10	Y
24	3598	£3,220	1	1007	13-8713	8	Y
25	3711	£4,497	1	1007	13-8971	5	N
26	3776	£3,445	1	1007	14-8613	5	N
27	3783	£5,251	2	1007	14-8515	20	Y
28	3853	£9,251	3	1007	14-8819	15	Y
29	3854	£5,500	1	1023	10-9106	8	N
30	3885	£1,481	2	1023	12-3167	20	Y
31	3998	£2,796	3	1023	12-3964	6	N
32	4128	£2,235	1	1023	10-8142	6	Y
33	4396	£1,202	1	1027	12-7864	20	Y
34	4605	£2,581	1	1027	14-8587	5	Y

Topic 9: **Using Macros in Microsoft Excel – Part 2**

9.1 Learning Objectives

This topic continues the overview of how macros can be used in Microsoft Excel and how to create and execute them. On completion of the topic, you will be able to:

- Create a macro that uses absolute cell references;
- Create a macro that uses relative cell references;
- Create an icon to run a macro;
- Print data using a macro;
- Secure documents against malicious macros.

9.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

9.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1: Formatting Cells to Display Currency

The data that was displayed on Slide 6 of the lecture is displayed below. Insert the data into a blank spreadsheet. Create a macro that formats the cells so data in them is displayed in currency format.

	A	B	C	D	E
1		Year 1	Year 2	Year 3	Year 4
2	Sales	24952	23232	67732	65943
3	Expenses	82652	46543	98987	44631
4	Profit	23232	32323	67765	58842

Exercise 2: Macros that Use Absolute Cell Reference

Open a spreadsheet that you have created and develop a macro that enables data in a specific column to be filtered in alphabetical order.

Exercise 3: Macros that Use Relative Cell References

In the same spreadsheet as above, create a macro that uses relative cell references to enable any column that contains non-numeric data to be displayed in alphabetical order when the macro is executed.

Exercise 4: Printing a Spreadsheet

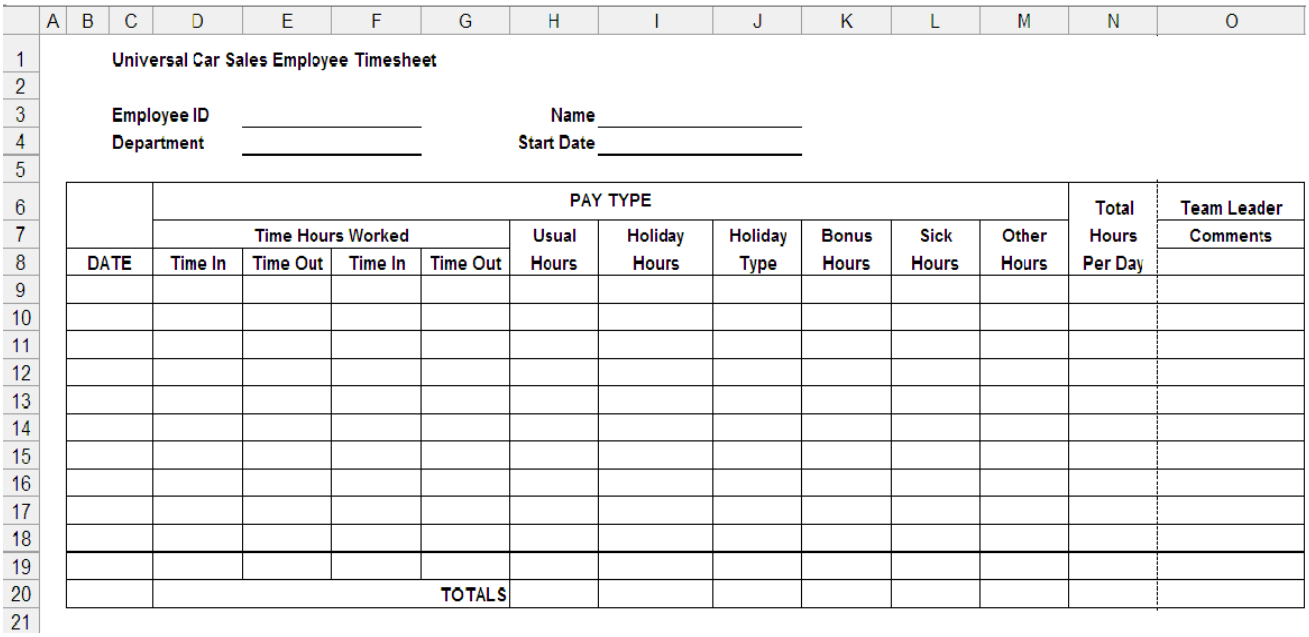
Create a macro that will print any of your spreadsheets when it is executed.

Exercise 5: Digital Signatures

Add digital signatures to each of the macros that you have created.

Exercise 6: Automating Efficient Data Entry and Validation

a. Look at the following timesheet that has been produced in Excel and identify where efficient data entry and validation needs to be applied.



Universal Car Sales Employee Timesheet

Employee ID _____ Name _____

Department _____ Start Date _____

	PAY TYPE											Total	Team Leader
	Time Hours Worked					Usual	Holiday	Holiday	Bonus	Sick	Other	Hours	Comments
DATE	Time In	Time Out	Time In	Time Out		Hours	Hours	Type	Hours	Hours	Hours	Per Day	
					TOTALS								

b. Produce appropriate validation (e.g. interactive data entry forms etc.) to ensure that the correct data is always entered into the timesheet. In some instances, you may need to set values. You should ensure that you include information and warnings for the user.

c. Create two macros that allow you to use two of your validations in another spreadsheet. Assign each one to a different icon and test each one in another spreadsheet of your choice.

d. Print screenshots of all the work that you have produced and the VBA code of each one of your Macros. Ensure that your name and student number appear on your work.

9.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Exercise 1: Assign Icons to Macros

a. Assign an icon to each of the four macros that you created in the laboratory session.

b. Place each icon on the Quick Access Toolbar.

c. Test that each one works.

Exercise 2: Documentation and Testing

Document the stages of how you worked through in Exercise 1 above and provide screenshots where necessary.

Exercise 3: Additional Reading

a. Read the following for further information on digital signatures and take notes on any important points.

- Microsoft (2011). *Microsoft Office: Digital Signatures and Certificates.* [Available Online] http://office.microsoft.com/en-gb/powerpoint-help/digital-signatures-and-certificates-HA010354667.aspx?CTT=1

You may wish to read a different version of this article, depending on which software version you are using.

b) Add a digital signature to one of the macros that you have created and screenshot the evidence.

9.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2

In the spreadsheet below:

a. When would it be more appropriate to use a macro that uses an absolute cell reference?

b. When would it be more appropriate to use a macro that uses relative cell references?

	A	B	C	D	E	F	G
1	Customer Number	Sales to Date	Region	Order Number	Product ID	Quantity	Customer Paid?
2	1014	£6,321	3	1001	13-6655	5	Y
3	1092	£3,591	3	1001	10-6025	10	Y
4	1437	£2,970	2	1002	10-4430	5	Y
5	1486	£3,752	2	1002	13-9672	7	Y
6	1490	£1,850	1	1002	12-8390	3	Y
7	1503	£1,300	1	1002	14-8417	3	Y
8	1776	£1,457	1	1003	12-3167	3	Y
9	1836	£3,796	3	1003	11-8994	6	Y
10	1842	£12,561	3	1003	12-8478	8	N
11	1923	£4,555	3	1003	13-3251	9	Y
12	2113	£1,251	2	1004	10-2562	8	Y
13	2401	£1,865	1	1004	11-2235	7	Y
14	2500	£6,792	1	1004	12-2587	10	Y
15	2503	£7,040	2	1004	13-2869	7	Y
16	2550	£1,206	2	1005	11-8771	7	N
17	2559	£2,501	2	1005	11-8994	6	N
18	2599	£2,396	3	1006	13-8261	8	Y
19	2884	£4,790	2	1006	10-7381	4	Y
20	2905	£4,221	3	1006	14-7321	30	N
21	3032	£2,586	2	1006	12-8521	12	N
22	3285	£8,506	3	1006	13-9672	5	Y
23	3504	£2,206	2	1007	13-8309	10	Y
24	3598	£3,220	1	1007	13-8713	8	Y
25	3711	£4,497	1	1007	13-8971	5	N
26	3776	£3,446	1	1007	14-8613	5	N
27	3783	£5,251	2	1007	14-8515	20	Y
28	3853	£9,251	3	1007	14-8819	15	Y
29	3854	£5,500	1	1023	10-9106	8	N
30	3885	£1,481	2	1023	12-3167	20	Y
31	3998	£2,796	3	1023	12-3964	6	N
32	4128	£2,235	1	1023	10-8142	6	Y
33	4396	£1,202	1	1027	12-7864	20	Y
34	4605	£2,581	1	1027	14-8587	5	Y

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Topic 10: **Testing Software Development**

10.1 Learning Objectives

This topic provides an overview of testing software development and explains the need for testing, the different types of tests and the production of test plans and reports. On completion of the topic, you will be able to:

- Explain why testing is needed;
- Discuss the different types of testing;
- Explain why a test plan is required;
- Produce a test plan;
- Determine expected test results;
- Record test results to enable comparison with expected results;
- Analyse test results against expected results to identify discrepancies;
- Investigate test discrepancies to identify and rectify their causes;
- Produce a testing checklist.

10.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

10.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1: ATM Withdrawal Testing Exercise

A customer needs to withdraw cash from a bank's automatic teller machine (ATM). Produce a test plan in the format of the one shown below that lists each procedure of withdrawing cash that can be tested. Do not enter data in the Actual Result, Test Passed and Action Taken columns.

Test No.	Description of Test	Expected Result	Actual Result	Test Passed (Date)	Action Taken	Test Passed (Date)
1						

Exercise 2: Spreadsheet Test Plan

Using a test plan in the same format as the one in Exercise 1, list the tests that could be undertaken when testing the design of the following spreadsheet. You should also list the possible actual results.

	A	B	C	D	E
1	**Company**	**Type of Company**	**Order Number**	**Cost**	**Date**
2					
3	IT Systems	Limited	54321	£450,000	20 October 2011
4	Sysco	Sole Trader	12345	£200,000	21 October 2011

Exercise 3: Microsoft Word Interface

Open the interface of Microsoft Word and produce a test plan that tests at least 4 icons, 4 main menu options and 4 sub-menu options from one main menu option. Run each test and include the actual results in your test plan.

Exercise 4: Macros

Create two macros, one in Microsoft Excel and one in Microsoft Word. Produce a test plan that includes the following headings and test each macro.

Test No.	Description of Test	Expected Result	Actual Result	Test Passed (Date)	Action Taken	Test Passed (Date)

Exercise 5: Testing a Macro that Protects a Spreadsheet

1. Open a new spreadsheet.

2. Enter the following VBA macro code into VB Editor. The macros below will protect/unprotect the spreadsheet that you are currently using with a password:

```
Sub ProtectSheet()
Dim Password    'This line of code is optional
Password = "1234"
ActiveSheet.Protect Password, True, True, True
End Sub
Sub UnProtectSheet()
Password = "1234"
ActiveSheet.Unprotect Password
End Sub
```

3. Run the macro

4. Name, save and close the spreadsheet.

5. Test that the macro works.

6. Document all stages of your testing in a test plan.

10.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Exercise 1

Read the following document for further information on producing a full test plan.

- Systeme Evolutif Limited (undated). *Test Plan Outline.[*Available Online] http://online.gerrardconsulting.com/iseb/otherdocs/ieee829mtp.pdf

Briefly explain the following in your own words:

- What is meant by the term IEEE829?
- What features should a good test plan include?

Exercise 2: Case Studies

Read the following to see how testing has been applied to various company systems. Take notes on any interesting points.

- Quality Softpro (2011). *Software Testing Case Studies*. [Available Online] http://www.qualitysoftpro.com/casestudy-list.php

Exercise 3: Quality Assurance and Testing

Read the following article and use the information to help you to produce your glossary in Exercise 6 below. Remember that you should try to explain each term in your own words.

- AskNumbers.com (2001). Quality Assurance and Software Testing. [Available Online] http://www.asknumbers.com/QualityAssuranceandTesting.aspx

Exercise 4: GUI Testing Checklist

Read the following article and try out some of the tasks on the GUI Testing Checklist website:

- Bazman (1999). GUI Testing Checklist. [Available Online] http://bazman.tripod.com/checklist.html#Section1

Exercise 5: General Information on Testing Software

The following websites contains useful information on software testing. Choose a couple of articles which look interesting from each one, read them and prepare brief notes to report back to other students during the tutorial for this topic.

- http://www.testinggeek.com/
- http://www.buzzle.com/articles/software-testing/

Exercise 6: Topic 10 Glossary

Complete the Topic 10 Glossary below. Remember to use your own words to note the meaning of each term.

TERM	MEANING	EXAMPLES
Acceptance Testing		
Alpha Testing		
Black Box Testing		
Beta Testing		
Bug		
Debugging		
Discrepancies		
Error		
Failure		

Fault		
Functional Testing		
Grey Box Testing		
GUI Testing		
Quality Assurance		
Rectify		
Regression Testing		
Security Testing		
System Testing		
Testing		
Test Plan		

UAT Testing		
Usability Testing		
Validation		
Verification		
White Box Testing		

10.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2

Explain the differences between:

- Bug
- Error
- Failure
- Fault

Topic 11: **Evaluating Software Development**

11.1 Learning Objectives

This topic provides an overview of the need to evaluate software development and discusses the different types of evaluation techniques, software functionality, efficiency, reliability and usability. It also discusses successful user interaction and the identification of enhancements and potential improvements to software.

On completion of the topic, you will be able to:

- Explain the need for evaluation of software development;
- Identify the types of evaluation techniques;
- Explain how functionality can be evaluated;
- Explain how efficiency can be evaluated;
- Explain how reliability can be evaluated;
- Explain how usability can be evaluated;
- Discuss how successful user interaction can be identified;
- Discuss how software enhancements can be identified;
- Discuss how potential improvements can be identified;
- Produce an evaluation checklist.

11.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

11.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1: Evaluate the 'Help' feature in Microsoft Excel

Use the following evaluation checklist to evaluate the Help feature in Microsoft Excel:

Evaluation Criteria	Always	Never	Sometimes	Comments
Is it easy to find the feature?				
Is the information needed easy to find?				
Is the information found easy to understand?				
Is the information found informative?				
Is the language used easy to understand?				
Is the layout of the information clear and logical?				
Can the required information be accessed directly?				
Does a structured search have to be used to find the required information?				
It is easy to interact with the feature?				
Are responses to invalid commands displayed clearly?				
Is it easy to exit the feature?				

Is it easy to navigate through the feature?				
If pictures are included are they relevant and do they aid understanding?				
Does the feature achieve its purpose?				

Exercise 2: Evaluation of Application Packages

Choose **four** application packages (e.g. one or two Microsoft Office programs, one or two Adobe programs etc.). Evaluate each one by using the following criteria. You should add your comments on each area, particularly for the last four questions.

PROGRAM ONE NAME: _____

Evaluation Criteria	Always	Never	Sometimes	Comments
Is it easy to open the program?				
Is the language used easy to understand?				
Is the layout of the information clear and logical?				
Can the required information be accessed directly?				
Does a structured search have to be used to find the required information?				
It is easy to interact with the program?				
Are responses to errors displayed clearly?				
Is it easy to exit the program?				

Is it easy to navigate through the program?				
Is the Help feature easy to use?				
Does the program achieve its purpose?				
Is it well designed?				
Is it a good quality program?				
Would you recommend the program to someone who had not used it before?				

PROGRAM TWO NAME: _____

Evaluation Criteria	Always	Never	Sometimes	Comments
Is it easy to open the program?				
Is the language used easy to understand?				
Is the layout of the information clear and logical?				
Can the required information be accessed directly?				
Does a structured search have to be used to find the required information?				
It is easy to interact with the program?				
Are responses to errors displayed clearly?				

Is it easy to exit the program?				
Is it easy to navigate through the program?				
Is the Help feature easy to use?				
Does the program achieve its purpose?				
Is it well designed?				
Is it a good quality program?				
Would you recommend the program to someone who had not used it before?				

PROGRAM THREE NAME: _____

Evaluation Criteria	Always	Never	Sometimes	Comments
Is it easy to open the program?				
Is the language used easy to understand?				
Is the layout of the information clear and logical?				
Can the required information be accessed directly?				
Does a structured search have to be used to find the required information?				
It is easy to interact with the program?				

Are responses to errors displayed clearly?				
Is it easy to exit the program?				
Is it easy to navigate through the program?				
Is the Help feature easy to use?				
Does the program achieve its purpose?				
Is it well designed?				
Is it a good quality program?				
Would you recommend the program to someone who had not used it before?				

PROGRAM FOUR NAME: _____

Evaluation Criteria	Always	Never	Sometimes	Comments
Is it easy to open the program?				
Is the language used easy to understand?				
Is the layout of the information clear and logical?				
Can the required information be accessed directly?				
Does a structured search have to be used to find the required information?				

It is easy to interact with the program?				
Are responses to errors displayed clearly?				
Is it easy to exit the program?				
Is it easy to navigate through the program?				
Is the Help feature easy to use?				
Does the program achieve its purpose?				
Is it well designed?				
Is it a good quality program?				
Would you recommend the program to someone who had not used it before?				

11.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Exercise 1: Usability Net

1. Access the following website: http://www.usabilitynet.org/home.htm
2. On the Usability Net homepage, select '*methods table'* under the heading 'Tools and Methods'.
3. Select the three sections listed below and read the information provided. You should make notes on any important points.

    - Design Guidelines
    - Diagnostic Evaluation
    - Performance Testing

Exercise 2: SUMI Questionnaire for the Evaluation of Software

1. Now return to the Usability Net homepage and select '*reference materials'* under the heading 'Tools and Methods.'
2. Select the section on questionnaires.
3. Select the section on SUMI questionnaires. Read through the following three sections and make notes on any important points.

    - What is SUMI?
    - SUMI analysis example
    - Sumi.ucc.ie/en

Exercise 3: Topic 11 Glossary

Complete the Topic 11 glossary by providing the meaning and examples for each term. Remember to use your own words.

TERM	MEANING	EXAMPLES
Evaluation		
Efficiency		

Enhancements		
Functionality		
Improvements		
Reliability		
Usability		

Exercise 4: Additional Reading

In Topic 2, you visited the following websites during your private study time. Return to them now and search for any additional information about the content of this topic. Make notes on anything you find interesting.

- GNOME: Interface Guidelines
  http://developer.gnome.org/hig-book/stable/

- Microsoft: Usability in Software Design
  http://msdn.microsoft.com/en-us/library/ms997577.aspx

11.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2

- What is meant by ‘good design’ and good quality?

Topic 12: **Combining End-user Software Development, Testing and Evaluation**

12.1 Learning Objectives

This topic provides an overview of how end-user software development, testing and evaluation can be combined for successful project completion. On completion of the topic, you will be able to:

- Identify business processes;
- Identify application software;
- Identify good practice in software interface design;
- Use advanced features and functions in Microsoft Excel and Word;
- Use macros in Microsoft Excel and Word;
- Produce a test plan;
- Produce an evaluation checklist.

12.2 Timings

Lectures:	1 hour
Laboratory Sessions:	3 hours
Private Study:	5 hours
Tutorials:	1 hour

12.3 Laboratory Sessions

The laboratory time allocation for this topic is 3 hours.

Exercise 1: Business Processes at Your Centre

List the business processes required by your college (centre).

Exercise 2: Application Software for Business Processes

1. List the application software that can be used for each of the above business processes (name the type rather than brand name).

2. Describe the reason for each of your chosen software.

Exercise 3: Examples of Good Interface Design

For each of your chosen programs, provide one example per program that you consider to be a good example of interface design.

Exercise 4: Macros in Microsoft Word

1. Develop a macro that can be used to enable custom headers and footers to be added to a word processed document.

2. Document the development of the macro.

Exercise 5: Macros in Excel

1. Develop a macro that can be used to enable data entry into an excel spreadsheet and that validates the data entry.

2. Document the development of the macro.

Exercise 6

1. Develop a macro that can be used to navigate between worksheets in an excel spreadsheet.

2. Document the development of the macro.

Exercise 7: Test Plan

Produce a test plan that includes tests and expected and actual results for each of the three macros that you have produced in Exercises 1, 2 and 3.

12.4 Private Study

You should spend approximately 5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

Exercise 1: Securing Documents

Think back to the *Gifts for Everyone!* case study from the lecture. Write a brief document to explain to users at the company how they can secure their documents against malicious macros.

Exercise 2: Recording Order and Sales Data

During the lecture, you looked at a case study involving the company *Gifts for Everyone!* Identify and explain what function could be used to enable data on customer orders to be found quickly in an excel spreadsheet that is used by the company to record their order and sales data.

Exercise 3: Revision

Review the lecture material from the whole module and ensure that you are comfortable with all of the topics. If there are areas where you need further clarification from your lecturer, make a note of them so they can be discussed during the tutorial. This exercise is designed to help you with your examination revision.

12.5 Tutorial Notes

The tutorials for this topic will last for 1 hour. You can expect to spend some of this time discussing your answers to the private study exercises with your lecturer and other students. Your lecturer will then direct you on completing the tasks below.

Exercise 1: Review of Private Study

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

Exercise 2

List the criteria for an evaluation checklist that could be used to evaluate the use of macro solutions in Microsoft Excel and Word.