

Tutorial Letter 101/3/2018

GRAPHICAL USER INTERFACE PROGRAMMING

ICT2611

Semesters 1 & 2

School of Computing

IMPORTANT INFORMATION

Please register on myUnisa, activate your myLife e-mail addresses and make sure that you have regular access to the myUnisa module website, ICT2611-2018-S1/S2, as well as your group website.

Note: This is an online module and therefore it is available on myUnisa. However, in order to support you in your learning process, you will also receive some study material in printed format.

BARCODE



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1 INTRODUCTION

Dear Student

Welcome to [the name of the module].

... [Add welcome message to students].

Because this is a fully online module, you will need to use myUnisa to study and complete the learning activities for this course. Visit the website for [module code] on myUnisa frequently. The website for your module is [the module website code written out in full, e.g. MODULE CODE-17-S1/S2].

1.1 Getting started ...

Owing to the nature of this module, you can read about the module and find your study material online. Go to the website at <https://my.unisa.ac.za> and log in using your student number and password. You will see [ICT2611-18-S1/S2] in the row of modules displayed in the orange blocks at the top of the webpage. Select the **More** tab if you cannot find the module you require in the orange blocks. Then click on the module you want to open.

You will receive this tutorial letter and a printed copy of the online study material for your module. While the printed material may appear different from the online study material, it is the same, as it has been copied from the myUnisa website.

We wish you much success in your studies!

2 OVERVIEW OF ICT

2.1 Purpose

Students, who have completed this module successfully, will be able to ...

This module is delivered using myUnisa and the internet as well as peer group interaction; community engagement is also included in some of the activities. Your lecturers will interact with you on myUnisa and via e-mail.

2.2 Outcomes

For this module, you will have to master several outcomes:

- **Specific outcome 1:**
- **Specific outcome 2:**
- **Specific outcome 3:**
- [etc]

3 LECTURER(S) AND CONTACT DETAILS

3.1 Lecturer(s)

The primary lecturer for this module is [insert lecturer names]: [insert photo of lecturer]

Department:

Telephone:

E-mail:

3.2 Department

You can contact the Department of ... as follows:

Telephone number:

E-mail:

3.3 University

To contact the University follow the instructions in the brochure **Study @ Unisa**. Remember to have your student number available whenever you contact the University.

Whenever you write to a lecturer, please include your student number to enable the lecturer to help you more effectively.

4 RESOURCES

4.1 Joining myUnisa

If you have access to a computer that is linked to the internet, you can quickly access resources and information at the University. The myUnisa learning management system is the University's online campus that will help you communicate with your lecturers, with other students and with the administrative departments at Unisa – all through the computer and the internet.

You can start at the main Unisa website at <http://www.unisa.ac.za> and then click on the myUnisa orange block. This will take you to the myUnisa website. To go to the myUnisa website directly, go to <https://my.unisa.ac.za>. Click on the **Claim UNISA Login** on the right-hand side of the screen on the myUnisa website. You will then be prompted to give your student number in order to claim your initial myUnisa details as well as your myLife e-mail login details.

For more information on myUnisa, consult the brochure **Study @ Unisa**, which you received with your study material.

4.2 Other resources – printed support material

Because we want you to be successful in this online module, we also provide you with some of the study material in printed format. This will allow you to read the study material even if you are not online.

The printed study material will be sent to you at the beginning of the semester, but you do not have to wait for it before you start studying – you can go online as soon as you have registered and find all your study material there. The material we will send you is an **offline** copy of the formal content for the online module. Having an offline copy will enable you to study for this module WITHOUT having to use the internet or to go to an internet café. It will save you time and money, and you will be able to read and re-read the material and start doing the activities.

It is very important that you log in to myUnisa regularly. We recommend that you log in at least once a week or every 10 days to do the following:

- **Check for new announcements.** You can also set your myLife e-mail account to receive the announcement e-mails on your cellphone.
- **Do the Discussion Forum activities.** When you do the activities for each unit, we want you to share your answers with the other people in your group. You can read the instructions and even prepare your answers offline, but you will need to go online to post your messages.
- **Do other online activities.** For some of the unit activities you will need to post something on the **Blog**, take a quiz or complete a survey under the **Self-Assessment** tool. Do not skip

these activities because they will help you complete the assignments and the activities for the module.

We hope that by giving you extra ways to study the material and practise all of the activities, this system will help you succeed in the online module. To get the most out of the online course you **MUST** go online regularly to complete the activities and assignments on time.

Remember, the printed support material is back-up material for everything that is found online on myUnisa. It does not contain any extra information. **In other words, do NOT wait for the printed support material to arrive before you start studying.**

4.3 Library services and resource information

For brief information, go to www.unisa.ac.za/brochures/studies

For detailed information, go to the Unisa website at <http://www.unisa.ac.za/> and click on **Library**.

For research support and services of personal librarians, go to <http://www.unisa.ac.za/Default.asp?Cmd=ViewContent&ContentID=7102>.

The Library has compiled numerous library guides:

- finding recommended reading in the print collection and e-reserves – <http://libguides.unisa.ac.za/request/undergrad>
- requesting material – <http://libguides.unisa.ac.za/request/request>
- postgraduate information services – <http://libguides.unisa.ac.za/request/postgrad>
- finding, obtaining and using library resources and tools to assist in research – http://libguides.unisa.ac.za/Research_Skills
- contacting the Library/finding us on social media/frequently asked questions – <http://libguides.unisa.ac.za/ask>

5 HOW TO STUDY ONLINE

5.1 What does it mean to study fully online?

Studying fully online modules differs completely from studying some of your other modules at Unisa.

- ***All your study material and learning activities for online modules are designed to be delivered online on myUnisa.*** Although we give you a printed copy to support your studies, the module is designed to be delivered online.
- ***All of your assignments must be submitted online.*** This means that you do all your activities and submit all your assignments on myUnisa. In other words, you may **NOT** post your assignments to Unisa using the South African Post Office. [This will depend on the module]
- ***All of the communication between you and the University happens online.*** Lecturers will communicate to you by e-mail, and using the **Announcements**, the **Discussion Forums** and the **Questions and Answers** tools. You can also use all of these ways to ask questions and contact your lecturers.

5.2 The myUnisa tools you will use

All of the information about myUnisa tools is located under **Unit 0** on the myUnisa website for this module. However, we thought it was important to highlight the tools that will be used for your formal assignments.

In this module, there are three different types of assessment using different myUnisa tools:

- **Discussions:** This is the place where the online discussion forums take place and where you can share your ideas and insights with other students in your group. For many activities, the discussion forums are also used, and there are five activities that will count as assignments for this module. For these assignments to be submitted the teaching assistant (TA) for the site needs to create a forum with a topic, for example **Assignment 01** under **Discussions**. When you click on **Discussions**, you should find the topic **Assignment 01: Language Diversity**. Here you click on **Reply** and a message box is displayed in which you will do your assignment. Scroll down to **Publish** to finalise/submit the assignment. Never create a new topic by yourself unless the TA requests you to do so. For the activities that need to be done under **Discussions**, the TA will create a forum called **Unit 1** and then a topic for the activity. Again, do the activity as a reply under the topic created by the TA and not as a separate topic.
- **Assignments:** The assignments that are not done under **Discussions** are called written assignments. You have to type these assignments in a Word document and submit them online in the same way as you will submit all the other assignments online. The assignments will be routed to your TA who will mark them. Depending on the assignment, you may be asked to fill in a form or type a document. These typed assignments must be submitted as Word documents using the online **Assignments** tool on myUnisa. The instructions for submitting these assignments are given under **Unit 0**.

Under **Discussions**, several other discussion forums are available where you can share ideas and post your opinions online. We have also provided the **Social Indaba** where you can socialise with the other students in the course. (In several African languages, an indaba is a place where people gather to interact socially.)

You may also ask questions using the **Questions and Answers** tool. If your question is of general importance, your TA may publish it for the whole group to see.

6 ASSESSMENT

6.1 Assessment plan

We have given you a breakdown of the formal portfolio activities and assignments as they become due during the semester:

- [Unit by unit, assignment by assignment, with due dates]
- [Or an assessment plan in table format with deadlines]

[You do not have to give the assignment questions in Tut101, since this is an online module. Give students the number of the assignment and the deadlines for the assessment – even if you do not give the assessment questions here, they should know what to expect – see example below*. If you want to give the assignment questions in the Tut101, you can include them here.]

*Because this is an online module, the assignments are not provided in this tutorial letter. Instead, the assignments are given in the study material as they become due during the course. You can see them when you go online or read about them in the printed support materials.

6.2 Year mark and final examination/portfolio

Your year mark for this module is as follows:

- weighting of the course: **year mark and examination/portfolio**

You will not write an examination for this module for the following reasons:

- Your final assessment task is called a portfolio and it is the focal point of this course.
- In your final portfolio, you are expected to reflect on ...
- The purpose of the final portfolio is to ...

7 CONCLUSION

Do not hesitate to contact us by e-mail if you are experiencing problems with the content of this tutorial letter or with any academic aspect of the module.

We wish you a fascinating and satisfying journey through the learning material and trust that you will complete the module successfully.

Enjoy the journey!

[Lecturer's name] – lecturer for [module code]

DEPARTMENT OF ...

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1 INTRODUCTION

Dear Student

Greetings to you and welcome to ICT2611 - Graphical User Interface Programming. We hope that you find it interesting and exciting.

Because this is an online module, you need to use myUnisa to study and complete the learning activities for this course. You need to visit the websites on myUnisa for ICT2611 frequently.

1.1 To get started...

Because this is an online module, you need to go online to see your study materials and read what to do for the module. Go to the website here: <https://my.unisa.ac.za> and login with your student number and password. You will see *ICT2611-18-S1* or *ICT2611-18-S2* in the row of modules in the orange blocks across the top of the webpage. Remember to also check in the - more- tab if you cannot find it in the orange blocks. Click on the module you want to open.

In addition, you will receive this tutorial letter and a printed copy of the online study materials from your module. While these printed materials may appear to be different from the online study materials, they are exactly the same and have been copied from the online myUnisa website.

We wish you success on your journey!

2 OVERVIEW OF THIS MODULE: ICT2611

2.1 Purpose

This module will be useful to provide a beginning qualified professional with a mid-level understanding of programming business software products using a computer language with the knowledge, skills and values needed to support and maintain software products in an organization. The student will be able to maintain and extend the business infrastructure. The student will be able to ensure that business software systems continue to meet the changing needs of an organization. Qualified students are able to analyze, design and develop software solutions to clearly defined problems to specific standards set by clients and industry.

2.2 Outcomes

For this module, there are several outcomes that we hope you will be able to accomplish by the end of the course:

Outcome 1:

Demonstrate and understanding of basic program operations.

Including: Input/Output. Basic arithmetic operations. Logical operations. Saving code

Outcome 2:

Utilize the programmer's environment.

Including: Toolbox, Object properties, Objects, Toolbars, Events, Methods, Design window and code window.

Outcome 3:

Use variables.

Including an appropriate use of: Variable types, scope, constants and conversion.

Outcome 4:

Demonstrate and understanding of structures and their use.

Including: Loops decision making, arrays, repetition, functions and procedures

Outcome 5:

Demonstrate an understanding of and use basic exception handling.

Including: Catch exception. Provide a way to handle the exception while code keeps running.

3 LECTURER AND CONTACT DETAILS

3.1 Lecturer

Please see the COSALL tutorial letters for the telephone numbers of the lecturers on this module. You may also get lecturers' details from the **welcome page** of this module on **myUnisa**.

When you contact the Lecturer, please do not forget to always include your student number. This will help the Lecturers to assist you.

Please note that this module is an online module. We would like you to make use of the discussions forums as much as possible for queries.

Administrative queries

For **matters not related to the content** of this module, please consult *studies @ Unisa* that you received with your study material. This contains information on how to contact UNISA (e.g. to whom you can write for different queries, important telephone and fax numbers, addresses and details of the times certain facilities are open).

Module queries from you to us

- **Email.** Send us an email (anytime) using the module email.
ICT2611-18-S1@unisa.ac.za (First Semester Students)
ICT2611-18-S2@unisa.ac.za (Second Semester Students)
- **Telephone.** Queries **about the content of this module** should be directed to us. Please have your study material and student number ready.
- **Appointment.** Make an appointment to discuss an issue with us.

Module information from us to you

- **Email.** Regular emails are sent to myLIFE accounts.
- **SMS.** These are sent with urgent and important information.

3.2 Department

The School of Computing can be contacted as follows:

Telephone number: +27 11 670 9200

E-mail: computing@unisa.ac.za

3.3 University

To contact the University, you should follow the instructions in the **study @ Unisa** brochure. Remember to have your student number available when you contact the University.

You may also try one of the following options:

- For students residing in SA, send an sms to 32695
- For all students, send an email request to info@unisa.ac.za, or
- Fax number (RSA) 012 429 4150
- Fax number (international) +27 12 429 4150
- E-mail study-info@unisa.ac.za

4 MODULE-RELATED RESOURCES

4.1 Prescribed textbook

Prescribed book for ICT2611 is:

Graphical User Interface Programming
Product code:UNI4-GUB-SI-O

The prescribed book for this module is not included with the study material. You have to purchase the book yourself. The book comes with an Express version of the compiler. Note that certain menus/facilities do not match exactly with the discussion in the book. You may buy the commercial version of the software that matches the book, but it comes at a considerable cost. Follow the four steps below to order your prescribed book from the provider (**MasterSkill**). You will not be able to purchase the book at a book store.

Step 1	On a computer, open Internet Explorer and type in the following address: www.masterskill.co.za
Step 2	Look for the Online Ordering link along the bottom and click it to go to the ordering portal

Step 3	Your username is unisa Your password is books Fill these in, and click Sign In .
Step 4	Once you have successfully logged into the Online Ordering Portal, please complete all required information. Follow the instructions to complete the order.

For any queries, use the following contact:

4.2 Recommended books

There is no recommended book for this module. However, a student is welcome to use any recent book on Visual Basic that may help him to increase his understanding and practice of the lessons learned from the prescribed textbook.

4.3 Joining myUnisa

If you have access to a computer that is linked to the internet, you can quickly access resources and information at the University. The *myUnisa* learning management system is Unisa's online campus that will help you to communicate with your lecturers, with other students and with the administrative departments of Unisa – all through the computer and the internet.

You can start at the main Unisa website, <http://www.unisa.ac.za>, and then click on the *myUnisa* orange block. This will take you to the *myUnisa* website. To go to the *myUnisa* website directly, go to <https://my.unisa.ac.za>. When you are on the *myUnisa* website click on the “Claim UNISA Login” at the right-hand side of the screen. You will then be prompted to give your student number to claim your initial *myUnisa* as well as *myLife* login details.

Please consult the publication **study @ Unisa** which you received with your study material for more information on *myUnisa*.

4.4 Other resources – Printed support materials

Because we want you to be successful in this online module, we also provide you with some of the study materials in printed format. This will allow you to read the study materials, even if you are not online.

- These printed study materials will be sent to you at the beginning of the semester, but you do not have to wait to receive them to start studying – You can go online as soon as you register and all your study materials will be there.
- Therefore, the printed materials are not something that you need to wait for before you start with the module. It is only an **offline** copy of the formal content for the online module.
- This will give you the chance to do a lot of the studying of this module WITHOUT having to go to the internet or to an internet cafe. This will save you money, of course, and you

will be able to take as much time as you need to read -- and to re-read -- the materials and do the activities.

It is therefore very important that you log into myUnisa regularly. We recommend that you should do this at least every week or every 10 days to check for the following:

- **Check for new Announcements.** You can also set up your myLife email so that you receive the Announcement emails on your cell phone.
- **Do the Discussion forum activities.** For every unit in this module, we want you to share with the other people in your group in the activities.

We hope that this system will help you to succeed in this online module by giving you extra ways to study the materials and practice with all of the activities and assignments.

Remember, the printed support materials are a back-up to everything that is found online, on myUnisa. There are no extra things there. **In other words, you should NOT wait for the Printed support materials to arrive to start studying.**

5 HOW TO STUDY THIS MODULE ONLINE

5.1 What it means to study online?

These modules are taught online – this means that it is totally different from some of your other modules at Unisa.

- ***This means that all your study materials and learning activities are designed to be online, on myUnisa.*** Even though we give you a printed copy to support your studies, the module is designed for online.
- ***This means that all of your assignments must be submitted online.*** It means that you do all your activities and submit all your assignment on myUnisa. In other words, you can **NOT** post your assignments through the South African Postal Service, except in exceptional cases.

This means that all of the communication between yourself and the university also happens online – by email, in Discussions and through Questions and Answers. You can use all of these ways to ask questions and contact your lecturers. This also means that your lecturers will communicate with you in the same way – through emails, with Please see the **study @ Unisa brochure** for full details.

VERY IMPORTANT – Always have your student number at hand when contacting the university. When sending an e-mail, write your student number and a short description of the message in the subject line.

Communication with fellow Students

Studying through distance education can make you feel as if you are alone out there, with no support or anyone with whom to share your frustrations and/or achievements. But this need not be the case. On the myUnisa site we will be forming a “classroom” where you can discuss any topics you’d like to. You need not feel alone while doing this module; actively participate in all the discussions and feel like a real student in a real study environment.

The online *Discussion Forum* might not give you the physical contact of attending a class, but it will

- provide contact between learners and faculty
- provide cooperation between learners
- encourage active learning
- provide prompt feedback
- communicate expectations
- present diverse talents and ways of learning

Should you feel the need to form a study group in your particular area, you can obtain the contact details of fellow students from the

Directorate: Learner Administration and Registration

PO Box 392

Unisa

0003

You can also add your name, contact details and the area in which you want to start the group to the forum topic related to study groups on the *Discussion Forum* to the left of this screen. Don't just sit back and expect other students to contact you to form the group; be an active participant and be willing to take the first step by contacting them.

E-Tutors

Please be informed that, with effect from 2013, Unisa offers online tutorials (e-tutoring) to students registered for modules at NQF level 5, 6 and 7, this means qualifying first year to third year modules.

Students registered for this module will be allocated to a group of students with whom you will be interacting during the tuition period as well as an e-tutor who will be your tutorial facilitator. Once you have been allocated to a group you will receive an sms informing you about your group, the name of your e-tutor and instructions on how to log onto MyUnisa in order to receive further information on the e-tutoring process.

Online tutorials are conducted by qualified E-Tutors who are appointed by Unisa and are offered free of charge. All you need to be able to participate in e-tutoring is a computer with internet connection. If you live close to a Unisa regional Centre or a Telecentre contracted with Unisa, please feel free to visit any of these to access the internet. E-tutoring takes place on MyUnisa where you are expected to connect with other students in your allocated group. It is the role of the e-tutor to guide you through your study material during this interaction process. For your to get the most out of online tutoring, you need to participate in the online discussions that the e-tutor will be facilitating.

5.2 Module specific study plan

Use your *study @ Unisa* brochure for general time management and planning skills

6 ASSESSMENT

6.1 Assessment plan

In this course you will be assessed through 3 compulsory written assignments and a final examination. The assignments contribute towards a year mark. Your year mark will then contribute **30%** towards your final mark and the examination mark **70%**. Since 2017 the contribution of the assignments to your final mark has been increased to 30%, so take advantage of this!

6.1.1 Unique assignment numbers

	Semester 1	Semester 2
Assignment 1	821285	761992
Assignment 2	864571	717790
Assignment 3	732134	802179

6.1.2 Due date of assignments

	Semester 1	Semester 2
Assignment 1	02 Mar 2018	17 August 2018
Assignment 2	29 March 2018	07 September 2018
Assignment 3	20 April 2018	28 September 2018

6.2 Assignments

Assignment 1 Semester 1 2018 – MCQ

1.1 A base class is a concept of object orientation that is associated with the following:

- A. abstract classes.
- B. inheritance.
- C. object instantiation.
- D. none of the above.

1.2 Which of the following activities would the fourth in the programming process?

- A. Build the user interface.
- B. Plan the application.
- C. Code the application.
- D. Test and debug.

1.3 The second step in planning an OOED application is:

- A. Draw a sketch of the user interface.
- B. Identify the objects to which you will assign tasks.
- C. Identify the tasks the application needs to perform.
- D. Meet with clients.

1.4 Select the incorrect statement.

- A. The oval is used in a flowchart to represent the start and stop point.
- B. The diamond symbol is used in a flowchart to represent, for example, a calculation task.
- C. The circle is not one of the four standard flowchart symbols.
- D. The parallelogram is used for input/output in a flowchart.

1.5 The value of the expression $2*3 + (6 / 3-3)$ is

- A. Runtime error
- B. -12
- C. 5
- D. None of the above.

1.6 Which of the following is not true about static variables?

- A. A static variable is a global variable.
- B. A static variable is a local variable.
- C. A static variable is not removed from memory until the application ends.
- D. None of the above.

1.7 A function returns [..]

- A. A static variable.
- B. ByVal.
- C. ByRef.
- D. A value.

1.8 A change to a Visual Basic.Net control or object's name takes place at:

- A. Execution time.
- B. Design time.
- C. Runtime.
- D. Compile time.

1.9 The [...] property determines the graphic to display in a picture box control.

- A. graphic
- B. image
- C. display
- D. picture

1.10 The following event occurs when a form is loaded into memory.

- A. Click.
- B. Load.
- C. Keypress.
- D. Right click.

Assignment 2 Semester 1 2018

Complete the following assignment on MS Word and then convert to pdf then submit on myUnisa. For any Visual Basic programs you need to complete the program on the Visual Basic IDE and then copy and paste your programs onto the word document. Copy and paste any user interfaces that you create in Visual Basic as well.

- 1 We would like to design the code for a part of the program that decides where equipment is kept.
 - If the item has an ID less than 2000 it will be kept in the Physics Laboratory.
 - If the item has an ID between 2001 and 4000 it will be kept in the Biology Laboratory.
 - If the item has an ID between 4001 and 8000 it will be kept in the Chemistry Laboratory.
 - If the item has an ID ending in a zero it will have to be kept in a locked cabinet.
- 1.1 Write pseudocode that processes the variable EquipID and outputs where the equipment is kept, using nested IF statements.
- 1.2 Give the Visual Basic code that carries out the selections using a SELECT..CASE statement.
- 2 In this question, we aim at creating a project that will calculate shipping charges from a two-dimensional table of rates. The rate depends on the weight of the package and the zone to which it will be shipped. The table of rates is given below. The weight row (first row) specifies the maximum weight for that rate. All weights over 10 kg use the last row. The first column specifies the zones. The weight and zone are inputs given by the user.

	1	3	5	10	➤ 10
A	1.0	1.58	1.71	2.04	2.52
B	1.5	2.0	2.52	3.12	3.72
C	1.65	2.4	3.1	4.0	5.1
D	1.85	3.05	4.0	5.01	7.25

- 2.1 Use VB.net to create a well-designed user interface for this program, with appropriate input and output fields and buttons.
- 2.2 Assume a two-dimensional array is used to store the rates where the rows specify the weights, in the same order as in the table, and the columns specify the zone in the same order as in the table. For example, the entry (3, 2) of the array will contain the rate 4.00. Define the type of the array and declare a global variable for that type.
- 2.3 Write a vb.net procedure that is called when the form is loaded to initialize the array with the rates.
- 2.4 Draw a flowchart for a procedure that will calculate the shipping charges for a given weight and zone.
- 2.5 Write the complete vb.net program for this project.

Assignment 3 Semester 1 2018

We want to create an application for the car wash named Chico's Car Wash. The form will contain two list box controls that do not permit the user to type in items at run time. The first list box will display the options for the exterior work and the other the options for interior work. The options for the exterior work are: wash and go (R35); wash and dry (60); wash, dry and tyres (70); wash, dry, tyres and polish (R150); The options for the interior work are: no interior work(R0); vacuum (R20); valet (R200). Store the descriptions of the items in string constants.

The form will consist of a button calculate cost of wash. The cost of the wash is a sum of the exterior and interior work that was selected by the user.

1.1 Write a TOE chart for this program.

1.2 Write a flowchart for this program.

1.3 Sketch a well designed user-interface for the program.

1.4 Develop the application, debug and correct errors until it runs correctly. Submit your code and evidence that your program runs by submitting screen shots of your running program.

Assignment 1 Semester 2 2018 – MCQ

1.1 One of the following expressions is not correct and may generate an error.

- A. Const Pi = 3.14
- B. Const Pi As Integer = 3
- C. 1. Const Pi As Double
2. Pi = 3.14
- D. None of the above.

1.2 Which of these options is not a valid step in the creation process of OOED applications?

- A. Meet with the client.
- B. Code the application.
- C. Use TOE chart to record application tasks.
- D. None of the above.

1.3 The last step in planning an OOED application is to ...

- A. Build the user interface.
- B. Plan the application.
- C. Code the application.
- D. None of the above.

1.4 The following is true about a flowchart:

- A. It accommodates repetition but not decision constructs.
- B. It accommodates loops but not decision constructs.
- C. It accommodates decision and repetition constructs.
- D. All of the above.

1.5 Which of the following is not true about passing a parameter to a program ByVal:

- A. A copy of the variable is made for the procedure.
- B. A function cannot pass parameters by value.
- C. A procedure can pass parameters by value.
- D. None of the above.

1.6 Alcon Toys manufactures several versions of a basic doll. Assume the basic doll is called Model A and the version are called B, C and D. In the context of OOP, the Model A is called the [...] class.

- A. derived
- B. base
- C. inheritance
- D. instance

1.7 The value of the following expression is:

- A. Run time error
- B. -12
- C. 5
- D. 7

1.8 If you do not provide a data type when declaring a variable, Visual Basic automatically assigns a the following data type to the variable:

- A. Double
- B. String
- C. Object
- D. Byte.

1.9 The [...] event occurs when a form is being read into the computer's internal memory.

- A. click
- B. keypress
- C. create
- D. load

1.10 A [...] variable is known only to the procedure in which it is declared.

- A. local.
- B. form-level.
- C. global.
- D. None of the above.

Assignment 2 Semester 2 2018

Complete the following assignment on MS Word and then convert to pdf then submit on myunisa. For any Visual Basic programs you need to complete the program on the Visual Basic IDE and then copy and paste your programs onto the word document. Copy and paste any user interfaces that you create in Visual Basic as well.

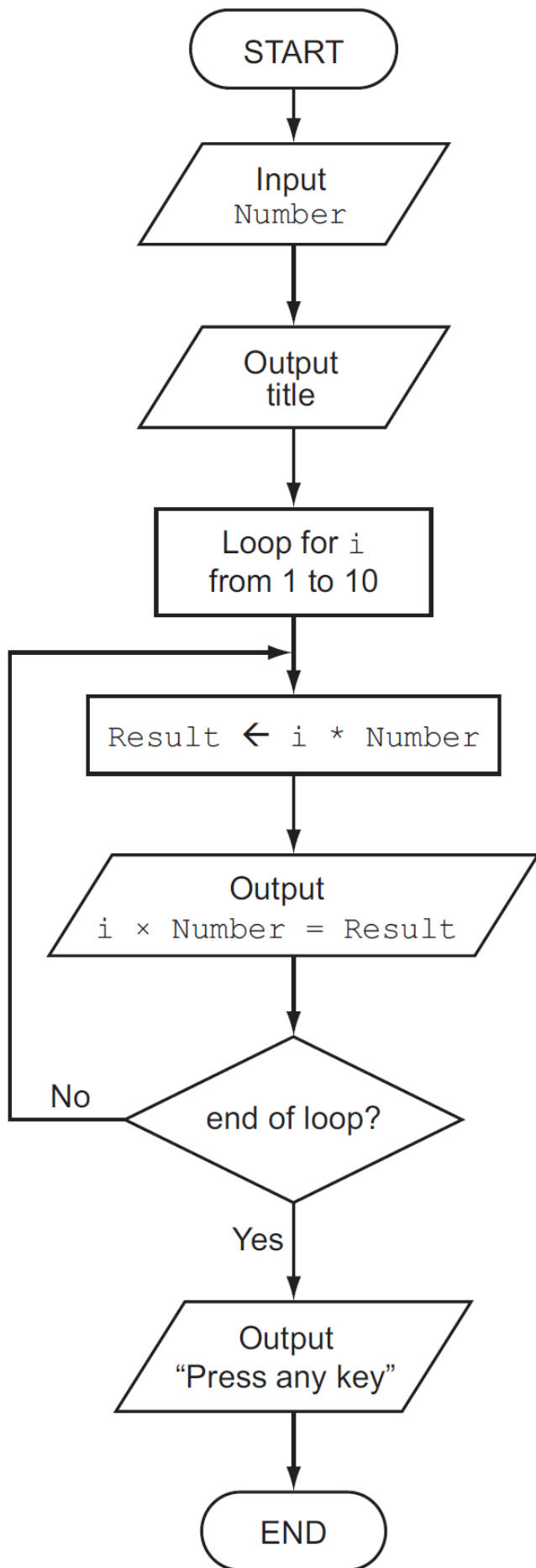
A teacher wants to write a program to help young children learn their multiplication tables.

- 1 Draw a suitable layout for the initial screen to let a child choose which multiplication table between 1 and 10 they want to learn.
- 2 Implement the user interface in Visual Basic.
- 3 If the child chooses the number 7, the screen displays the following:

```
7 Times Table
=====
1 x 7 = 7
2 x 7 = 14
3 x 7 = 21
4 x 7 = 28
5 x 7 = 35
6 x 7 = 42
7 x 7 = 49
8 x 7 = 56
9 x 7 = 63
10 x 7 = 70

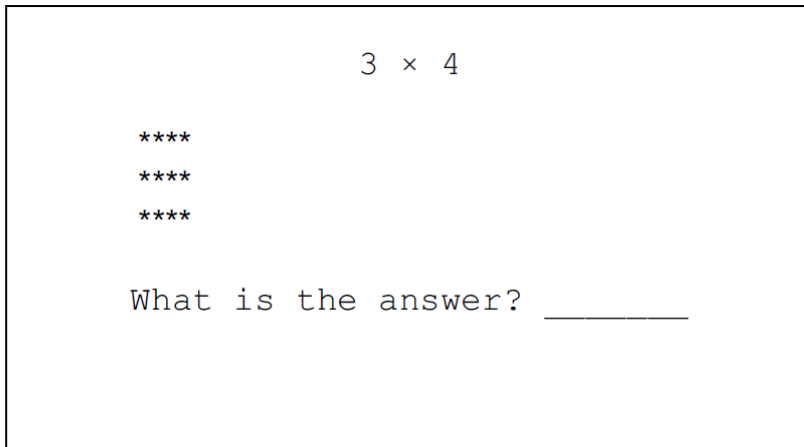
Press any key
```

The flowchart on the next page gives the algorithm that implements the display above. Write the Visual Basic code to implement the flowchart. The code should be linked to the user interface you created in question 2.



- 4 The teacher wants the program to:
- show a visual representation of a multiplication
 - ask the child to key in an answer.

For example, the multiplication of 3×4 is represented as shown



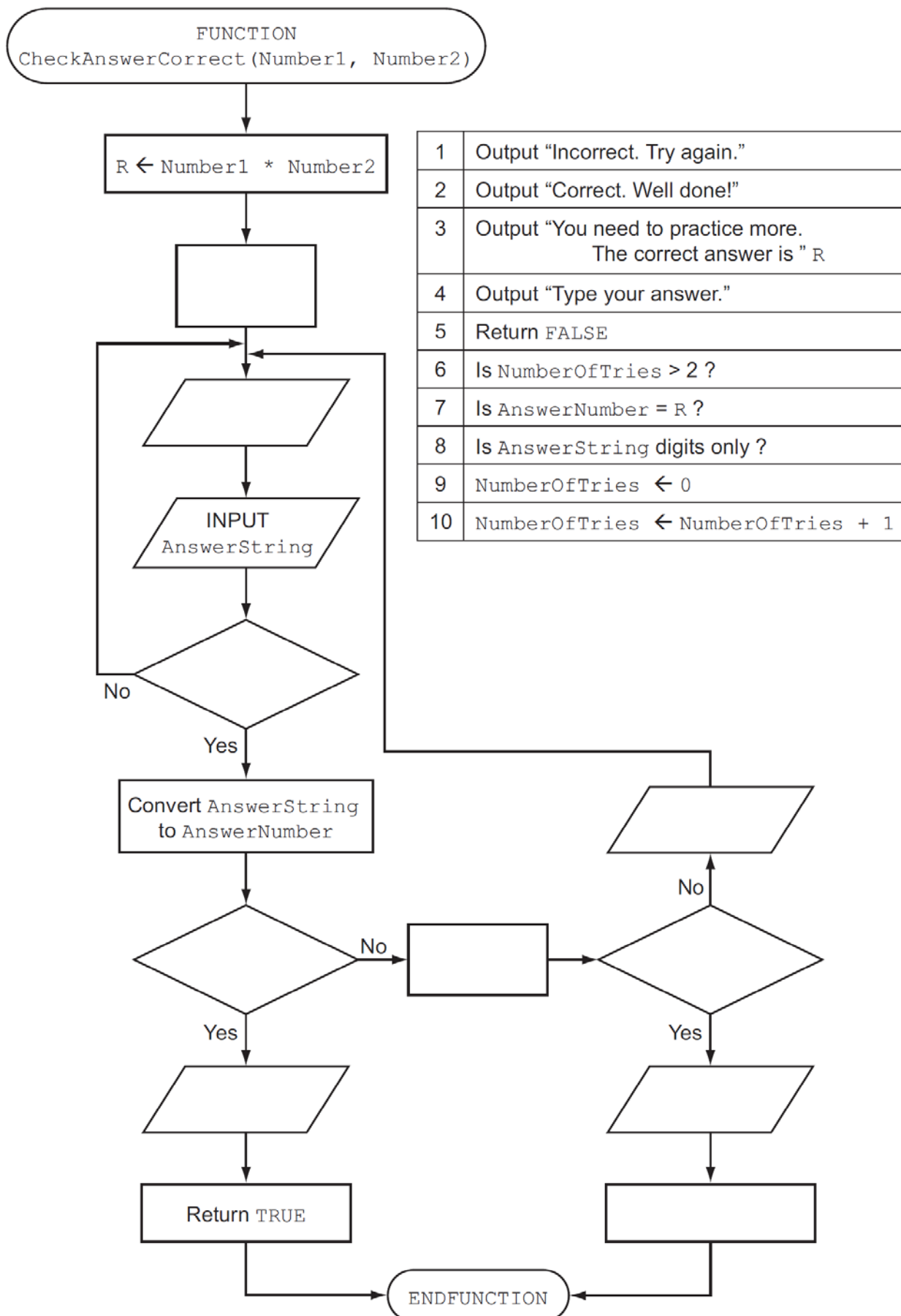
This grid of asterisks (*) is produced by the procedure call:

ShowMultiplicationGrid(3, 4)

Give the pseudocode to implement this procedure.

- 5 The function `CheckAnswerCorrect` gives the child three chances to type in the correct answer. The function returns `TRUE` if the child typed the correct answer, and `FALSE` if all three attempts are incorrect.

Complete the flowchart on the next page, using the given statements. Label each blank symbol with the correct statement number. You can redraw the flowchart or download the picture in jpg format from [myunisa.com/additional resources](http://myunisa.com/additional-resources).



- 6 The teacher wants a new program to test children. A sequence of multiplication questions is displayed. If a child inputs 3 incorrect answers for a question, the program outputs the number of questions the child answers correctly. Then the program stops.

The program design uses the following functions and procedures.

Function or procedure name	Description
Random(X)	A function that returns a whole number in the range 1 to X inclusive
Display(Number1, Number2)	A procedure that produces the output $5 \times 8 = ?$ when Number1 is 5 and Number2 is 8
CheckAnswerCorrect(Number1, Number2)	The procedure from Question 5
TestScoreTotal	A function that returns the number of questions answered correctly

Complete the following pseudocode for the new program:

```

FUNCTION TestScoreTotal RETURNS .....
    DECLARE AnswerCorrect, ..... : BOOLEAN
    DECLARE ..... , ..... , ..... : INTEGER
    ..... // initialise Score
    Finish ← FALSE
    REPEAT
        Number1 ← ..... // generate two
        Number2 ← ..... // numbers
        Display(Number1, Number2)
        AnswerCorrect ← CheckAnswerCorrect(Number1, Number2)
        IF ..... // was answer correct?
            THEN Score ← Score + 1
            ELSE ..... // flag set to stop program
        ENDIF
    UNTIL ..... // is flag set?
    RETURN ..... // return the number of
    ..... // questions answered correctly
ENDFUNCTION

```

[9]

Assignment 3 Semester 2 2018

Complete the following assignment on MS Word and then convert to pdf then submit on myUnisa. For any Visual Basic programs you need to complete the program on the Visual Basic IDE and then copy and paste your programs onto the word document. Copy and paste any user interfaces that you create in Visual Basic as well.

Question 1

We want to write a program to calculate the water bill when the user clicks on a button called bill. Two readings in kiloliters are entered into textboxes called oldread and newread. A label called yourbill must be used to show the total bill for the month. The price of water per kiloliter varies. Consumption up to and including 4 kiloliters costs R5 per kiloliter. Consumption over 4 kiloliters to and including 9 kiloliters costs R3 per kiloliter. Consumption over 9 kiloliters costs R2 per kiloliter. A person who used 6 kiloliters will pay R5 per kiloliter for the first 4 kiloliters and an additional R3 per kiloliter for the other 2 kiloliters consumed. Calculate the water consumption from the two readings given and display it in the label called consumption. The two meter reading must be validated. Readings are valid when both are numeric and if the old reading is smaller or equal to the first reading. If any reading is invalid, the appropriate textbox must be selected so that new input may be typed. The procedure must not be allowed to execute any further. In each case, an appropriate error message must be displayed in a message box. Focus must be returned to the control from which the exception originated.

1.1 Write a TOE chart for this program.

1.2 Write a flowchart for this program.

1.3 Sketch a well designed user-interface for the program.

1.4 Develop the application, debug and correct errors until it runs correctly. Submit your code and evidence that your program runs by submitting screen shots of your running program.

7 CONCLUSION

Do not hesitate to contact your lecturer by email if you are experiencing problems with the content of this tutorial letter or any aspect of the module.

I wish you a fascinating and satisfying journey through the learning material and trust that you will complete the module successfully.

Enjoy the journey!

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