

TU2983: Advanced Databases
Individual Assignment 1
Normalized Relational Databases and Basic System Interfaces

TASK 1: Build a Normalized Relational Database in Microsoft Access for your individually assigned topic:

1. Refer to the “**TU2983 Individual Assignment Topics**” document on <http://ukmfolio.ukm.my> for your individually assigned topic. Decide on an appropriate/catchy name for a shop selling this product (e.g. “Solar Panel Mart”).
2. Build a table called **TBL_PRODUCTS_<YOUR_MATRIC>** (e.g. TBL_PRODUCTS_A123456) that contains a minimum of 40 rows of products matching your individually assigned topic. This table must have the following attributes:
 - **FLD_PRODUCT_ID** → assign your own ID (keep it simple, future assignments will be based on the same data)
 - **FLD_PRODUCT_NAME** → copy from the source website (e.g. *amazon.com*, *tesco.com*, *zalora.com*)
 - **FLD_PRICE** → copy from the source website, or set your own price.
 - **2 other attributes** that can be used as categories (e.g. *FLD_BRAND*, *FLD_TYPE*, *FLD_SHIRTSIZE*)
 - **At least another 2 attributes** of any type (e.g. *FLD_DESCRIPTION*, *FLD_QUANTITY*, *FLD_WARRANTYLENGTH*)Your **TBL_PRODUCTS_<YOUR_MATRIC>** table must have at least 7 attributes in total.
3. Copy a picture of the product, for each product in your **TBL_PRODUCTS_<your_matric>** table, and rename the picture to match your **FLD_PRODUCT_ID** for the product. (e.g. if the **FLD_PRODUCT_ID** is “25”, save the picture as “25.jpg”)
 - Save all your pictures in a subfolder called “**pictures**”.
4. Build additional tables for the following:
 - **1 table for Staff** information, with the necessary attributes (start with only 3 staff)
 - **1 table for Customer** information, with the necessary attributes (start with only 3 customers)
 - **1 table for Order** information, with the necessary attributes (start with no orders)
 - And **any additional table you need** so that:
 - 1 customer can make many orders, but each order is only for 1 customer
 - 1 order can contain many products, and each product can be in many orders
 - 1 staff can process many orders, but each order is only processed by 1 staff
 - Ensure that all your tables are **normalized** to at least **3NF**.
5. Use the relationship view in Microsoft Access to specify the relationship between each of your tables
 - Each table must be related to at least 1 other table.
 - All tables must be connected to each other through relationships.
 - **Enforce referential integrity** on all your relationships to show the **cardinality** of the relationship in the Microsoft Access Relationship View.
6. Your database file must be saved as **DB_<YOUR_SHOP_NAME>_<YOUR_MATRIC>.accdb** (e.g. DB_SOLARPANELMART_A123456.accdb)

TASK 2: Build a new Visual Basic .NET project for creating a Basic System Interface for your shop:

1. Build a “Main Menu” for your shop, called **frm_mainmenu_<your_matric>.vb** (e.g. frm_mainmenu_a123456.vb)
 - Your “Main Menu” must have buttons, where each button will open a separate form that can view the contents of one table. You must have enough buttons and forms to open and view the contents of all your tables.
 - **For each table (products, customers, staff, orders) build a form that will open and view the table’s data.**
 - Each button on your “Main Menu” must open one of these forms. You must have at least 4 buttons.
 - Your “Main Menu” will be evaluated in terms of **aesthetics, design, neatness and professionalism**.
2. Your VB.NET project must be saved as **prj_<your_shop_name>_<your_matric>** (e.g. prj_solarpanelmart_a123456)

SUBMIT THE FOLLOWING:

1. **Your entire VB project folder** for this assignment’s project.
2. **Your Microsoft Access Database**, which should be stored in your VB project’s Bin/Debug directory.
3. **Your “pictures” subfolder**, which should be stored as a subdirectory in your VB project’s Bin/Debug directory.
 - Compress all the files above into a single *.ZIP or *.RAR, and label this file as **<your_matric>_<your_shop_name>.zip/.rar** (e.g. a123456_solarpanelmart.zip)
 - Upload your *.ZIP/*.RAR file as a **PUBLIC SHARE** on a filesharing website (eg: Google Drive, Dropbox, Box.com, Mega)
 - **You must make sure that your *.ZIP/*.RAR file is a PUBLIC SHARE which is accessible by EVERYBODY (i.e. no login required)**
 - Create a link file, which is a text file (in *.txt/*.doc/*.docx file format) that contains your PUBLIC SHARE LINK, and upload it to UKMfolio.
 - The link file for all assignments must be submitted to UKMfolio before the due date.

Due date: Friday 27th November 2020, 11:59pm.

Due date for Pusat Kembangan Pendidikan Executive Students: Sunday 6th December 2020, 11:59pm

TU2983: Advanced Databases
Individual Assignment 2
Data Entry and Data Manipulation Interfaces

IMPORTANT NOTE: This assignment continues from the work you have done in “Individual Assignment 1”. You are required to re-use same Visual Basic Project that you created for “Individual Assignment 1”, or use an improved version of the same Visual Basic Project for “Individual Assignment 1”:

1. You will use the same topic that was previously assigned to you in “Individual Assignment 1”.
2. All windows forms that you previously created for “Individual Assignment 1” must be used, or be improved.
3. The database file that you previously created for “Individual Assignment 1” must be used, or be improved.
4. The pictures that you have previously collected created for “Individual Assignment 1” must be used.
5. You will add new windows forms required for this assignment to your previous Visual Basic Project.
6. Evaluation of “Individual Assignment 2” will only be made on the following Tasks:

TASK 1: Build a catalog form that the user can use to browse each product in your database and view the product’s picture.

1. Use the same table of products, **tbl_products_<your_matic>** (e.g. tbl_products_a123456), that you created for “Individual Assignment 1”, or use an improved version of the table of products.
2. Use the same pictures of products that you created for “Individual Assignment 1”.
3. The user must be able to view the attributes of each products and the product picture at the same time

TASK 2: Build forms for each of the following tables, which will allow you to INSERT, UPDATE, and DELETE data that is contained in that table:

- The **Products** table
 - The **Staff** table
 - The **Customers** table
1. For the **Product INSERT** form only, include a button to select a product picture when you are inserting a new PRODUCT database record through your form.
 - **IMPORTANT:** Your evaluator will test your program by attempting to add new products and new product pictures.
 2. You must ensure that your program does not terminate when a user makes a mistake in data entry.
 - **IMPORTANT:** Your evaluator will test the resilience of you program in capturing errors, by attempting the following mistakes:
 - a. Deliberately adding a primary key that already exists for a new data row.
 - b. Deliberately typing a foreign key that does not exist when editing data.
 - c. Deliberately adding alphabetical data for numeric attributes.

TASK 3: Add new buttons to your existing ‘MAIN MENU’ form that can open each of the forms that you built for TASK 1 & 2.

1. Your program will also be evaluated for aesthetics, neatness, and user-friendliness.

SUBMIT THE FOLLOWING:

1. **Your entire VB project folder** for this assignment’s project, which contains:
 - **Your Microsoft Access Database**, which should be stored in your VB project’s Bin/Debug directory.
 - **Your “pictures” subfolder**, which should be stored as a subdirectory in your VB project’s Bin/Debug directory.
 - **All the old forms** you previously created for “Individual Assignment 1”.
 - **All the new forms** that you created for “Individual Assignment 2”.
2. Compress all the files above into a single *.ZIP or *.RAR, and label this file as **<your_matic>_<your_shop_name>.zip/.rar** (e.g. a123456_solarpanelmart.zip)
3. Upload your *.ZIP/*.RAR file as a **PUBLIC SHARE** on a filesharing website (eg: Google Drive, Dropbox, Box.com, Mega)
 - **You must make sure that your *.ZIP/*.RAR file is a PUBLIC SHARE which is accessible by EVERYBODY (i.e. no login required)**
 - **Create a link file**, which is a text file (in *.txt/*.doc/*.docx file format) that contains your PUBLIC SHARE LINK, and upload it to UKMfolio.
4. The link file for all assignments must be submitted to UKMfolio before the due date.

Due date: Friday 27th December 2020, 11:59pm.

Due date for Pusat Kembangan Pendidikan Executive Students: Sunday 3rd January 2021, 11:59pm

TU2983: Advanced Databases
Individual Assignment 3
Transaction Form and Software Installer

IMPORTANT NOTE: This assignment continues from the work you have done in “Individual Assignment 1 & 2”. You are required to re-use same Visual Basic Project that you created for “Individual Assignment 1 & 2”, or use an improved version of the same Visual Basic Project for “Individual Assignment 1 & 2”:

1. You will use the same topic that was previously assigned to you in “Individual Assignment 1”.
2. All windows forms that you previously created for “Individual Assignment 1 & 2” must be used, or be improved.
3. The database file that you previously created for “Individual Assignment 1 & 2” must be used, or be improved.
4. The pictures that you have previously collected for “Individual Assignment 1 & 2” must be used.
5. You will add new windows forms required for this assignment to your previous Visual Basic Project.
6. Evaluation of “Individual Assignment 3” will only be made on the following Tasks:

ASSIGNMENT 3 will be evaluated using your final program that is installed using your SETUP.EXE installer only, and no longer through Visual Studio.

TASK 1: Build a form for the user to MAKE ORDERS for multiple products.

1. The ORDER for multiple products must be made in a single form, using a single ORDER ID.
2. The **MAKE ORDER** form must show/display calculated values such as SUB-TOTALS and TOTALS. However, these calculated values do not need to be stored in the database.
3. The ORDER for products must be processed as a **TRANSACTION**.
4. When entering data into the MAKE ORDER form, all items in the order must be successfully COMMITED into the database, or ROLLED-BACK completely if there is an error.
 - IMPORTANT: Your evaluator will test ACID compliance of your ORDER TRANSACTION by deliberately causing an error when entering data for the order.

TASK 2: Build a form that the user can use to VIEW existing ORDERS.

1. This **VIEW ORDER** form is only used to look at existing ORDERS already in the database, and to look at the list of products ordered in each ORDER.
2. Both your MAKE ORDER form and VIEW ORDER form should look something like FIGURE 1 (it does not need to be identical). →

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INVOIS

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No. Pesanan : PO045

Tarikh : 8 Ogos 2006

Butir	Kuantiti	Harga Semuit (RM)	Jumlah (RM)
NZK smartphone	5 unit	980.00	4,900.00
NZK mpnone e-23x	4 unit	640.00	2,560.00
NZK lite QT10	4 unit	760.00	3,040.00
Jumlah Kasar			10,500.00
Tolak: Diskaun Niaga 10%			1,050.00
Jumlah Bersih			9,450.00

Ringgit Malaysia : Sembilan Ribu Empat Ratus Lima Puluh Sahaja

Serahan : Ang. dib.

Syarat : Diskaun tunai

10% 7 hari

5% 14 hari

K. & K. di K.

Pengurus

FIGURE 1: Approximate appearance of your MAKE ORDER and VIEW ORDER form.

TASK 3: Create an INSTALLER for your program and a Splash Screen (i.e. main product title screen)

1. Use a “Setup and Deployment” project in Visual Studio to create the installer.
 - IMPORTANT: “Express” versions of Visual Studio do not have the “Setup and Deployment” project option.
2. Make sure there is a **Desktop shortcut** for executing your installed program.
3. Design your Splash Screen appropriately to suit your individual topic. You will also be evaluated based on the aesthetics and appearance of your Splash Screen.
4. Make sure your FULL NAME, MATRIC NUMBER and SHOP/PROJECT NAME are labeled on the Splash Screen.

TASK 4: Create a *.ZIP/*.RAR containing your project’s contents, and upload it to a file sharing website as a PUBLIC SHARE.

1. Compress the following folders in a single *.ZIP/*.RAR file:
 - a. One folder labelled as **<your_matric>_SOURCECODE**, that contains you entire VB project source code folder.
 - b. One folder labelled as **<your_matric>_INSTALLER**, that contains your program’s SETUP.EXE file and installer (*.msi) files (i.e. everything in the ‘Debug’ directory of your “Setup and Deployment”).
2. Upload your *.ZIP/*.RAR file as a **PUBLIC SHARE** on a filesharing website (eg: Google Drive, Dropbox, Box.com, Mega)
3. **You must make sure that your *.ZIP/*.RAR file is a PUBLIC SHARE and is accessible by EVERYBODY (i.e. no login needed)**
4. Create a link file, which is a text file (in *.txt/*.doc/*.docx file format) that contains your PUBLIC SHARE LINK, and upload it to UKMfolio.

SUBMIT THE FOLLOWING:

1. **Your project’s complete *.ZIP/*.RAR file**, which must be uploaded to a file sharing website as a PUBLIC SHARE
2. **Your project’s link file**, which must be uploaded to UKMfolio.

Due date: **Friday 22nd January 2021, 11:59pm.**

Due date for Pusat Kembangan Pendidikan Executive Students: **Sunday 24th January 2021, 11:59pm**