MONASH University
Information Technology

FIT1013 Digital Futures: IT for Business
Assignment 2 (20%)
Submission Deadline: 20th October 2021 5pm
Developing an application using Excel (VBA)
Group Assignment (Maximum of 2 students)

Learning Objectives

Upon successful completion of this assignment, you should be able to:

i. Write Macros (sub procedures) using VBA in Microsoft Excel
ii. Use appropriate data types, declare and use variables and/or constants
iii. Write event procedures for some Excel and VBA objects.
iv. Use repetition and selection structures in VBA code
v. Use the Workbook, Worksheet and Range objects
vi. Use other objects as necessary
vii. Perform data validation on user input
viii. Construct arithmetic expressions in VBA code
ix. Follow appropriate rules relating to the scope of variables
x. Design user forms using a variety of controls
xi. Apply other useful worksheet functions where appropriate, e.g. Vlookup() and Format() functions in VBA code.

Group Assignment

- This assignment promotes students' collaborations working in pairs. Students must form their paired grouping within the same tutorial, the latest being the end of Week 7. You will choose your group via the Assignment Two Groups (see Moodle Assessments page).
- Students will be graded as a group. Every student in the group is required to participate and contribute to the assignment actively. These would be used as a basis for marks adjustment for the assignment's final score (if necessary). At the end of the assignment, all students must complete their Peer Assessment (to be made available in Moodle) confidentially and individually. Failure to complete the assignment peer assessment by the due date might result in a lower mark for the final score.

Submission Requirements

- You are required to submit the assignment via Moodle as an MS Excel Macro-Enabled Workbook. The file names should include the Unit Code, assignment number and your Group ID number, following this format:

  FIT1013A2_GroupID.xlsm

- Other documents that need to be submitted are meeting minutes and individual timesheets.
- Only one of the group members will submit the assignment for the group.

Late Submissions

- Late submissions will be penalised, as stated in the submission link in Moodle.

Assessment Criteria

The assessment will give attention to how well you demonstrate your skills to complete the tasks – e.g. ensure all assignment requirements are met, fulfil the functional requirements of the scenario, the development is robust and maintainable.

It is important for each team member to contribute and participate equally, otherwise, you will be marked based on the amount of effort and quality of the work that you produce. You should not divide the tasks among yourselves – the assignment will be assessed as a group.

Demonstrate your in-progress application to your tutors in Week 8 and Week 10 (see Requirements section), then demonstrate your complete application in Week 12. This will allow you to explain your design and what you've achieved in this assignment so far. Any member who fails to turn up to any of the demonstrations will fail that component of the assignment. In addition to the marks allocated for the tasks that require demonstration, some marks are allocated for demonstration, e.g. for clarity and completeness.

Scenario

SSS (Simon's Smart Home Service) is a new start-up in Victoria that sells and installs smart home products, as well as providing home automation services and supports. Customers can make orders by phone or by email. So far, all orders are recorded on a simple Excel spreadsheet. Due to the increases in order, SSS requires a computer application to help them to manage the product information, customer details, job orders by the customers as well as the details of job completions. This application should be written in Excel (VBA), so that they can improve their current process. Simon is now contracting you to develop an Excel application (file can be saved in "*.xlsm"* extension) that integrates what they currently have into a more user-friendly interface, in order to maintain their day-to-day business.

Simon has provided the Excel spreadsheets that they currently use to maintain their daily orders – "FIT1013 A2.xlsx". Please note that this file does not contain all their business data (for privacy), but they are enough for you to understand the business scenario. Some of the data in the file are de-identified due to privacy issues but they maintain the same structure. Your application should work the same using the provided actual data. In short, do not change any format or structure of the original data in the worksheets, unless stated otherwise. Simon reminded you that the application is to be developed in Microsoft Excel 2016 or later so that he and his data entry clerks can run the application smoothly on their computer. He would also like you and your group to show him your work progress (milestone) so that he can be sure that the application is completed on time. Failing to do so may result in reduced payments or cancellation of the project.

Requirements

Functionality

1. A user form named "Main Menu" is presented upon opening the workbook. The user form will contain buttons to perform the key activities described in the points below. If the user closes the form, it should be possible to bring the form back by clicking on the button named "Show Menu" in the 'Menu' worksheet. This form should display the following options:

i. Customer Information
ii. Job Schedule
iii. Job Complete
iv. Backup/Recover Job Details
v. Print Preview

ALL groups need to complete and demonstrate Function #1 in Week 8. (5 marks)
You do not need to demonstrate the complete functionality 2-6 in Week 8, you only need to show the workable menu.

Each button in the main menu is corresponding to a function described below.

2. A user form named "Customer Information" that allows the details of a customer to be added or modified. This form should allow users to cancel/close the form, or to confirm before the details are added/changed to the "Customer" worksheet. If it is a new customer, then the details should be added under the last row.

   Note: *The Customer ID is generated automatically by the system and increments by 1 each time. E.g. if the ID of the last customer (last row) is 5, then the new customer ID is 6.*

ALL groups need to complete and demonstrate Function #2 in Week 10 labs. (5 marks)

3. A user form named "Job Schedule" that allows the user to enter the details of a new job request.

   i. The form should display an auto-generated Job ID (in chronological order) when it is opened, a list of customers, a list of product types, and job types will be made available for selection. Tentative date and time can be entered manually (set default at current date & time).
   ii. Please note that each job item should have a unique product type and job type. For example, smart lock installation is different from smart lock maintenance, they are different job items even when requested by the same customer and having the same Job ID. Each job item may use more than one product item, e.g. installation of three smart locks. See existing schedules in the Jobs worksheet for examples.
   iii. Design your application in such a way that the user can add more than one job item in a single form, for the same customer.
   iv. The form should include a 'Transfer' button that transfers the details of the new job schedule to the Jobs worksheet, updates product quantity in Product Type worksheet, then returns to the previous form i.e. "Main Menu" form.
   v. Highlight the actual start date & time, completion date & time, job duration and total amount columns for this job in light colour (e.g. yellow).

ALL groups need to complete and demonstrate Function #3 in Week 10 labs. (15 marks)

4. A user form named "Job Complete" that allows users to record the details of a newly completed job.

   i. A list of open jobs (yet to complete) will be made available for selection. This form shows the information of a specific job, e.g. Job ID, customer, product type, job type, date and time.
   ii. Users will enter the actual start date and time, completion date and time.

iii. The job duration will be calculated, displayed on the form, and stored in the Jobs worksheet.
iv. The total charges of the job (including the call-out fee) will be calculated and stored in the Total amount column.

The total amount charged for a job is calculated based on the product type, job duration and a call-out fee. For jobs more than 4 hours, the call-out fee is waived. For example, an installation of three Type A smart locks that take 2.5 hours will be charged for cost of product $200 x 3, plus installation fee $50 x 2.5 hours, plus call-out fee $100, will come to a total amount of $825.

v. The form should include a 'Complete' button that transfers the details of the corresponding rows in the Jobs worksheet.
vi. Remove the highlights colour for the actual start date and time, completion date and time, job duration and total amount columns for this job.

A few technicians of SSS are using a mobile application that can log their job start and end time for a certain job (match with Job ID), these data can be saved as an Excel file. An example file is given to you – "FIT1013 A2_track_job.xlsx".

vii. Simon would like to have a button that can import these data from the Excel file and transfer to the Job worksheet (in replacing manual actions of i, ii and v). Name the button "Import from External".
viii. A button named "Print Tax Invoice", on the user form to allow users to print the job details and charges to a PDF file.
- The date on which the invoice is produced.
- Use Job ID as Invoice number.
- Customer e.g. name and address.
- For each job item:
  - Job details e.g. product type, job type, start date & time and end date & time.
  - Charges, i.e. amount for a job item.
- Plus 10% GST.
- Grand total of the invoice.

ALL groups need to demonstrate Function #4 in Week 12 tutorials. (35 marks)

5. A user form named "Backup/Recover Job Details" that allows the user to export the job data to an external file for backup and import job details from the same database when needed for data recovery. The external file is in MS Access database format. A sample Access database named "FIT1013 A2_Data.accdb" has also been provided to you.

   i. During importing, any discrepancies (between the records in the worksheet and the database) should be recorded and reported in a separate worksheet called "Discrepancies".

ALL groups need to demonstrate Function #5 in Week 12 tutorials. (10 marks)

6. A user form named "Print Preview", which allows the user to choose a customer from a list, then input a start date and end date. It will create preview pages (similar to Function #4 item viii) that present all completed jobs between those dates, for a certain customer.

ALL groups need to demonstrate Function #6 in Week 12 tutorials. (5 marks)

Documentations

Your application should be briefly documented on the first worksheet (which should be named 'Menu'). The documentation should include:

- Team Number
- Authors' details (Student ID & Name)
- Date of completion
- Instructions on how to use the application (including any features used or assumptions made)

Other documents that need to be submitted are meeting minutes and individual timesheets. Failure to do so may result in penalties like reduced payments from Simon (i.e. marks). The templates for the meeting minutes and timesheet are available in the Moodle Assignment 2 submission link.

(5 marks)

Demonstrations

Demonstrate your in-progress application to Simon and his assistant Peter (role played by your tutors) in Week 8 and Week 10 (as specified in Requirements section). Demonstrate your complete application in Week 12.

(5 marks)

Quality of Solution

Some considerations:

1. Simplicity - is the code concise, easy to read and understand?
2. Generality/flexibility - does the solution work with valid data that the marker will enter when testing your program?
3. Robustness - does the solution cope well with human errors, e.g. protected the sheet or range that are supposed to be read only by a data entry clerk?
4. Appropriateness of variable and constant declarations and usage, e.g. are conventions followed, are variables declared in suitable places, etc.?
5. Appropriate use of graphic controls and consistency in the design of your user forms.
6. Make use of decision structures and repetition structures.
7. Include data validation to ensure the user only enters valid information, and report any meaningful error messages.
8. Use appropriate indentation in your code so that it is easily readable.
9. Include appropriate documentation (or comments) in your code.

(15 marks)

Files Provided

The following files are provided in this assignment:

- FIT1013 A2.xlsx which contains the initial data for each sheet in the Excel file.
- FIT1013 A2_Data.accdb which contains job data in MS Access format.
- FIT1013 A2_track_job.xlsx

1. Customer information worksheet

This worksheet contains information about customers, such as:

- Customer ID - auto number
- Business Name – optional
- Customer Name - contact person first & last name

- Street Address
- Email - email address of the customer
- Phone - phone contact of the customer

2. *Product Type information worksheet*
   This worksheet provides information about the various products that are available. The information in this list includes:
   - Product Type
   - Product Cost
   - QoH - Quantity on hand

3. *Job Type information worksheet*
   The information in this list includes:
   - Job Type
   - Service Fee – per hour
   - Call-out Fee

4. *Jobs information worksheet*
   The detailed information for each job includes:
   - Job ID
   - Customer ID
   - Tentative date & time
   - Product type
   - Quantity
   - Job type
   - Actual start date & time
   - Completion date & time
   - Job Duration – in hours
   - Total Amount

Notes and Assumptions:

1. Please note that some of the details may not be normalised, as our intention is to cover mainly on the functionalities rather than the data recorded in the sheets.
2. If you are an experienced VBA programmer and know other features and plug-ins that are not covered in this unit's materials, please speak to your tutor before using them. You must be using VBA version 6.0, NOT VB.NET, which is available in Office 2016 and Office 2019.
3. Please check with your tutors if you have any assumptions.