# CITS2401 Computer Analysis and Visualization 2017 Semester 2

# Assignment 3

Due date: **27 October 2017 @ 5:00PM**

**Total marks: 50**

This assignment is to be completed in Microsoft Excel and submitted via LMS. It does not involve Cody Coursework.

**Assignment submission instructions:**

- Submit 1 Excel file containing all your solution via the CITS2401 page on LMS (http://www.lms.uwa.edu.au) in Weekly Modules -> Week 10 -> Assignment 3
- You have unlimited attempts to upload your solution. However, only last submission will be graded.
- Name the Excel file as: *YourSurname_Studentnumber.xlsm*, e.g. Smith_902787.xlsm
- Enable macros in the Excel file and your solution will be graded on ECM computers.
- Failure to follow the submission guidelines may result in the award of zero grade.
- Once you submit your assignment, download it again to ensure that it is uploaded correctly.
- If you are not sure, ask a lab demonstrator to help you with the submission of your assignment.

**Plagiarism**

All work submitted should be your own. I am sure you will agree that this is for your own good!! Note that we have ways to detect plagiarism in code. For example, there are many possible ways to solve the questions and if your solutions match closely, we will be able to identify this. You must not share your solution with others. Incidences of plagiarism will be taken seriously and will be reported to the Head of School as Academic Misconduct and dealt with as per the university policy.

**Assignment Overview**

There is one problem having multiple tasks and task-wise breakdown of marks is provided. The data file "housingData.xlsx" is provided on LMS which needs to be used. You need to enable macros to write VBA code and submit your solution as per guidelines mentioned above. Your solution should be generic and will be tested with different data in the same format.

**Problem:**

The Government of Australia established Australian Bureau of Statistics (ABS) in 1974 under the Australian Bureau of Statistics Act. It is an independent statistical agency which provides key statistics on a wide range of economic, population, environmental and social issues to assist and encourage informed decision making, research and discussion within governments and the community.

An excel file '`housingData.xlsx`' contains the data taken from ABS website and is provided with the recorded data for three types of housing: *residential property*, *established houses* and *attached dwellings*, in three worksheets named after the type of housing. Don't change the data containing in these worksheets.

Rename the file as *YourSurname_Studentnumber.xlsm*, e.g. `Smith_902787.xlsm` and complete the following tasks.

**Task 1: (1 marks)**

Create a new worksheet in the provided excel file with title "`Analysis`". All of your work should be in this worksheet. Do not change the data provided in the existing worksheets. Write your name and student ID in the newly created worksheet in cells B2 and B3 respectively.

**Task 2: (1 mark)**

Copy the data of cell range A5:B30 from the worksheet "`Residential_Property`" and paste it in the worksheet "`Analysis`" in the cell range A5:B30.

**Task 3: (9 marks)**

Find the averages of eight capital cities for residential property for each type of residential property measure and time/month mentioned in column A and B respectively using cell array formula. Display the results in column C in front of their respective measure and time. Round the average values to two decimal places using Excel formulae. Write an appropriate title for the column in Cell C5.

Similarly find the averages of eight capital cities for established housing and attached dwellings for each measure and time using cell array formulae. Display results of established housing and attached dwelling in Column D and E respectively in front of their respective measure and time. Round the average values to two decimal places using Excel formulae and write appropriate titles for the columns in Cells D5 and E5.

**Task 4: (6 mark)**

Find the maximum and minimum of each measure for each month of eight capital cities for residential property and display in column G and H respectively. Display each result in front of its respective measure and time row. Write an appropriate title for the columns in Cell G5 and H5.

Similarly find the maximum and minimum of each measure for each month of eight capital cities for established housing and attached dwellings. Display results of maximum and minimum results for established housing in column I and J respectively; and for attached dwelling in Column K and L respectively in front of their respective measure and time.

**Task 5: (4 mark)**

Write a formula to count number of negative values in the data "percentage change from previous quarters" for all capital cities in all three types of housing. Display the result in cell B34 and write appropriate title in cell A34.

Similarly write a formula to count number of negative values in the data "percentage change from corresponding quarter of the previous year" for all capital cities in all three types of housing. Display the result in cell B35 and write appropriate title in cell A35.

**Task 6: (8 marks)**

Plot the averages of Index Numbers calculated in Task 3 for all three types of housing for all months available.

*Remember the guidelines mentioned in the lecture for all rules and information of the plots.*

**Task 7: (8 marks)**

Plot the Index Numbers of Perth region for all months and all types of housing using column/bar chart for comparative purposes.

*Remember the guidelines mentioned in the lecture for all rules and information of the plots.*

**Task 8: (13 marks)**

Add a button on the worksheet close to Cell Range A43:B46. Write a VBA code to find all the negative values in the data "percentage changes from previous quarter" for all types of housing and display them in column A starting from cell A48. Also find the respective month, capital city and housing type of each negative value found and display them in the same row in columns B, C and D respectively. The code should also display appropriate headers in cell range A47:D47 for the data in the cells below.

The VBA code should only run when button is clicked and should not be automatically calculated when data is changed. In addition, whenever the button is clicked, it should clear the cells below cell range A46:D46 and perform the action explained above.

Remember you must use VBA programming techniques using loops to solve this task. DO NOT use excel formula or excel functions for this task.

A sample image of worksheet is provided below. Your solution may look like this. However, the results shown in the image are sample results and may not be the correct results.