# MOD006127
# COMPUTER GRAPHICS PROGRAMMING
# 2018 - 2019

# SEMESTER 2 COURSEWORK
# ASSIGNMENT 010

This assignment is in two parts. Part 1 (80%) requires you to extend the functionality of a basic 2D drawing application. Part 2 (20%) requires you to write a short report evaluating one graphical drawing technique of your choice. Note there is no pass mark for either component, the 010 final mark will be a weighted overall average for which the pass mark is 40%.

## Part 1: (80%) Extending a 2D drawing application

The file GrafPack.cs is provided for you, which contains the partial code for a WinForms application that currently just creates and displays only one square. You are required to provide for the drawing to be composed of a number of different shapes referenced in an array. The separate shapes should all be defined as classes which inherit from a class Shape. The shapes should be created using rubber-banding. The main menu might contain the following options (you may change these if you wish):

**Create:** Produces a sub-menu for creation of Square, Circle and Triangle shapes.

**Select:** Allows the user to cycle through the shapes using mouse clicks or keyboard, highlighting the selected shape. Alternatively the shape may be selected by clicking on a vertex.

**Transform:** If a shape has been selected, this should produce a sub-menu offering Move, Rotate. The amounts of movement and rotation may be input from the keyboard or via the mouse, including 'drag and drop' operations.

**Delete:** If a shape has been selected, this will delete it from the screen and from memory.

**Exit:** Terminate the program cleanly.

The given classes may be modified, but only modifications for which documentation is supplied will be taken into account for marking. Do not use the advanced transformation features of the GDI or WPF (such as use of the class Matrix and its various methods), but perform the operations using the principles outlined in this module. You may enhance the functionality beyond the above specification to provide added value (see mark scheme).

# Part 2: (20%) Evaluation of a graphical drawing technique

Choose one technique used in a computer graphics drawing application that must involve drawing lines and/or curves and/or shapes, and write a short 500-1000 word description of that technique (algorithm or algorithms) and an evaluation of it's accuracy (how 'real' it is) and efficiency (resource consequences). You may choose any technique you like, but this must be pre-agreed with the tutor to confirm relevance to the module and to ensure the same technique is not duplicated between students (generally the more specific the technique the better in that it might allow broadly similar topics to be sufficiently different to allow eligibility for both).

# Submission guidance

This work should be submitted by the end of teaching Week12; for Cambridge this will be to the iCenter by 2pm on Friday 3rd May, 2018 (or by local arrangement for associate/partner institutes). The submission should be in two parts, i.e. 4 items of submission>

Part1:

i) A hard copy of a report describing the extensions to the GrafPak application you have been able to implement. No word limit, but the summary must only be one-side of A4. You may alter the page formatting/ font size if you want to maximise the words as long as the quality of the presentation is not degraded (clear layout and structure, readable). This excludes any front page and back page covers you may wish to include.

ii) A hard-copy listing of the C# source code.

Part 2:

iii) A hard copy of a report describing your chosen graphics drawing technique (maximum 1000 words) using the following structure: Title, Introduction, Description, Evaluation, Conclusion.

Electronic copy

vi) An electronic copy of the reports (Parts 1 and 2) as listed above on disk or USB sick. For Part 1 remember to also include a compiled executable copy of your program.

For details of marking see the feedback sheet (to be provided).

# Reassessment

If you are unfortunate enough to require a coursework reassessment, you should attempt both the Part1 and Part2 assignment again. For Part 1 you are encouraged to extend and/or explore a different approach compared to the first attempt, and for Part 2 you are encouraged to further develop your chosen technique, or choose an alternative, completely different technique (no restriction on topic other than must involve drawing lines and/or curves and/or shapes).