COMP 8551
Assignment #2
Instructor: Borna Noureddin

All work should be done in pairs or in groups of three.

Total marks: 100

The code must be written in C++ or Intel x86 assembly instructions. All files required to build and deploy the app/executable must be provided. Submit all your project files and any documentation to the D2L dropbox folder as a single ZIP file with the filename A00ABC_A00DEF_A00XYZ_Asst2.zip, where ABC, DEF and XYZ are your A00 numbers. All required documentation (README file, code comments, etc.) must be included.

1) [50 marks] Start with the sample code given in class for x86/x64 assembly language. In one of them, the windows application reads in a colour image and a "kernel" image. The kernel image is "blended" with the original image according to the following:

```
pBlendImg[i][j] = pOrigImg[i][j] * blendFac + pKernelImg[i][j] * (1 - blendFac);
```

   where **pOrigImg** is the original image, **pKernelImg** is the kernel image, **pBlendImg** is the resulting image, and **blendFac** is the blending factor. Describe how the blitBlend function works for each of the three simMode's. Include descriptions of how each of lines of code with the intrinsics and asm instrunctions works. Which mode runs the fastest and second fastest, and why?

2) [30 marks] The code uses the alpha channel of the kernel image as the value for blendFac. Modify the code in both cases to use the alpha channel of the destination image for the blending factor instead.

3) [10 marks] Write a simple function that takes an object as an argument by value. Write code to call the function and show the disassembly code associated with the function call. Now write the same function, but have it take the argument by reference, pass the object by reference and show the new disassembly code. What is the difference?

4) [10 marks] Write a simple function that takes no arguments and performs a simple math function. Show the disassembly code associated with the function. Now make the function inline and show the new disassembly code. What is the difference?