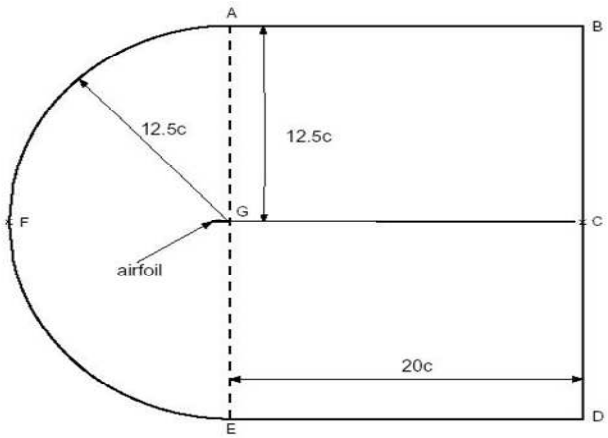
Note. Deadline for submiting the coursework, by 5th /Dec/2008, Friday, to the School Office (Building 7 Lanchester, Level 5, Room 5013)

1, Fluent settings for the coursework.

You may want to do it similarly as those for the 'Airfoil tut2' (details in week3-4 notes). I rewrite here for your convenience:

- Open airfoil_tut1.cas, save as airfoil_tut2.cas (or you may prefer to use your own airfoil geometry and mesh now).
- Re-setup some parameters in airfoil_tut2,
- Define->Models->Viscous->K-epsilon (keep the defaults). For those resolution y_1^+<5, you may want to use Spalart-Allmaras Model.
- Change the inlet velocity magnitude from 50m/s to less than 10m/s to get a relatively thicker boundary layer. Define->Boundary conditions->farfield1 (AF & FE) -> velocity inlet->set x-velocity 9.96m/s (or something appreciate), y-velocity 0.872m/s (or something appreciate, also depending the angle of attach), set turbulence specification method to intensity and viscosity ratio->0.1% and 1 respectively (for Spalart-Allmaras Model, choose viscosity ratio 1). Set the same parameters for the other inlet (farfield2, AB & ED). Set farfield3 (BC & CD) to pressure-outlet boundary type, click Set... and set the Gauge Pressure at this boundary to 0. Click OK.
- Re-initialize and run the computation.
- Get the computation converged (e.g. to a residual 10^{-6}).
- Compare the velocity vectors with those from tutorial 1.
- Save case and data files as airfoil_tut2.cas(dat).



Note, the above domain is only an example for you. You may want to design your own.

2, Further mesh refinement.

a) Check the notes for the assignment (http://www.afm.ses.soton.ac.uk/~ztx/sess6011/SESS6011_coursewk.htm) how much has been done and how much has not. The notes have been uploaded to the Blackboard.

b) Have you made one structured mesh and one unstructured one with a BL mesh?

c) Have you checked the velocity contour/vectors and refined/coarsened the mesh in some area, and checked the results are essentially identical to the coarse mesh (exporting some profiles in some typical stations and plot in MS EXCEL for quantitative comparison).

d) Have you plotted a lift coefficient – angle of attack profile and analysed the slope?

How to double your email account space (currently you have 50Mb quota)?

Go to ISS website www.iss.soton.ac.uk, ->go to Subscribe -> Sign in to manage your existing account -> Manage Your Account -> login -> You will see the existing Unix Filestore quota (which is the space you save your CFD data to, and the place to receive your external email and to transfer to your email Exchange account) ->click Managing your account ->Next ->click Change Unix filestore quota ->Next -> change to 100Mb.