16/05/2016
Dyson School of Design Engineering
DE1-Computing -1, Assessment-1
This assignment carries 15% of the final mark.

This is a Python coding assignment. Please submit your answers as one Jupyter notebook file with code cells or a zip file of separate Python codes for each question. Note that you will get marks for your correct attempts even if the code gives errors for some lines.

1.1 A complex number is given by $y = 2.0 + 3.0j$
Write a Python code that generates the message – "The real part of y is 2.00 and the imaginary p art is 3.00". Note that the message shows the number upto 2 decimal places. **[20 marks]**

1.2 You can generate an integer random number between a and b using the following code:

```
import random as r
x = r.randint(a,b)
```

Write a Python code to access random members of the list of tables – "study table", "soldering table", "kitchen table", "wooden table", and "plastic table".

Display the output using "print" command that displays which table is selected for any random number below the total number of tables. For instance, if your random number is 0, it will display "Table 1 is a study table". **[20 marks]**

1.3 Write a Python code using symbolic math to find the solutions for the function $f = x^3 - 12x^2 + 44x - 48 = 0$. Solutions of the functions are those x values at which the function value is 0. Then extend the Python code to substitute the solutions to test whether the function value becomes 0 at the solutions. **[20 marks]**

1.4 Use Python symbolic math to simplify the equation given by $g = (x^2 + 2xz + x)/x$. Hence find the value of g when x = 1 and z = 2. Display the answer using a print command. **[20 marks]**

1.5 Write a Python code to generate numbers from 1 to 100 in steps of 2 and assign it to a variabl e called x. Hence generate values for $y = \sin(x)$. Then plot y against x. **[20 marks]**