

Technical Informatics I Assignment 4

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Technical Informatics 1: Dr Fatimah

- Aims
 - Familiarise students with functions and arrays
- Expected Outcomes
 - Students are able write a code that contains a userdefined function, arrays and apply all programming concepts that has been learnt
- References
 - Harry H. Cheng, 2010. C for Engineers and Scientists: An Interpretive Approach, McGraw Hill



Consider the simple pendulum problem. The rod of which the bob mass swings has the length $l=0.15\,m$ and swings from an initial angle $\theta_0=1.5\,rad$. Construct a C program using *ChIDE software* to determine the location of the bob mass, θ . The equation for a simple pendulum is given by:

$$\theta = \theta_0 cos \left(\sqrt{\frac{g}{l}} t \right)$$





a) Calculate the change in θ in rad/ for a range of time $0 \le t(s) \le 20$ with 100 points in between. Present the output as shown in **Table 1**. Your answers must be in **four decimal places**.

| Table 1 | | |
|---------|-----|-------------|
| t(s) | 1 | theta (rad) |
| 0.0000 | | ??? |
| ??? | - 1 | ??? |
| ??? | | ??? |
| 20.000 | - 1 | ??? |

b) Plot the output in (a) using ChiDE's function:

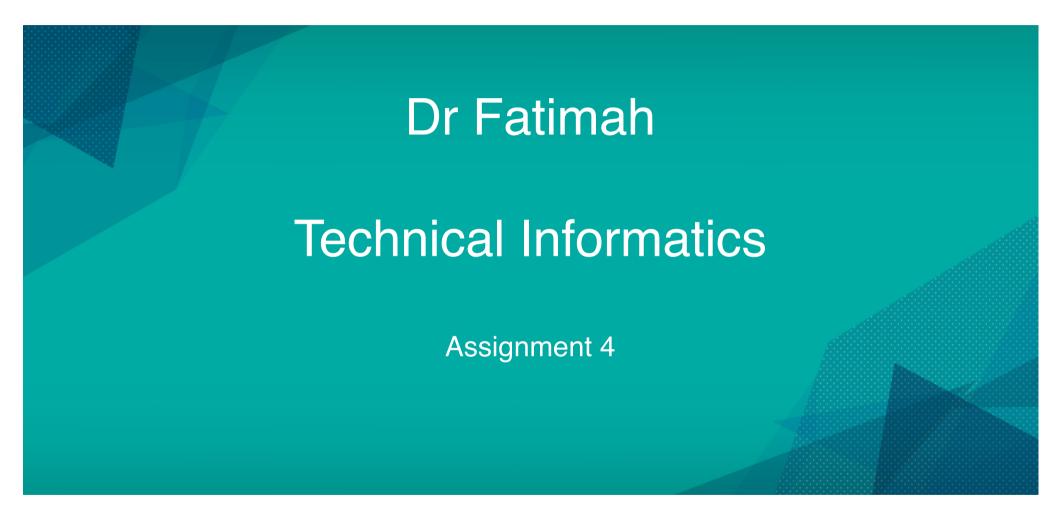




- In your code, make sure you:
 - Use appropriate comments
 - write your name, student ID and a brief explanation of what your code does
 - comment on certain important lines
 - Program structure
 - Include all important elements (stdio.h, int main(), return 0 etc)
 - Declaration of variables
 - Assign appropriate types to the variables
 - Assign appropriate names for the assigned variables
 - Assign appropriate values to the variables









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