

Technical Informatics I

Assignment 4

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Technical Informatics 1: Dr Fatimah

Assignment 4

- Aims
 - Familiarise students with functions and arrays
- Expected Outcomes
 - Students are able write a code that contains a user-defined 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



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Consider the simple pendulum problem. The rod of which the bob mass swings has the length $l = 0.15 \text{ m}$ and swings from an initial angle $\theta_0 = 1.5 \text{ rad}$. 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:

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



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

Table 1

<code>t(s)</code>		<code>theta (rad)</code>
0.0000		???
???		???
???		???
20.000		???

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

plotxy.



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- 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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