Jervis Muindi Wednesday, April 10, 2013
Numerical Analysis and Algorithms
Homework 7

Homework 7 Readme

Introduction

This package is a python script that solves the model problem for a vibrating string.

Dependencies

You should make sure that you have both Python 2.7+ and Matplotlib library installed in order to make use of this program.

How to Use

Usage:

python main.py [x-width] [t-width] [total_time] [graph_rate]

x-width : amount of x-spacing between points

t-width: delta in time to be applied in a single step forward

total_time: amount of time be used in simulating the system

graph_rate: A graph should be drawn/plotted every "graph_rate" steps

'Example: python main.py 0.01 0.01 2 10'

'Note: 1) All input values should be positive numeric values. '

' 2) Graphing ability is dependent on MatplotLib being installed'

Sample Run

Test Run 1

I ran the program on inputs:

x-width = 0.01

t-width = 0.01

total_time = 2

graph_rate = 10

Please see the folder run1 which contains image files graph1.png to graph21.png for the sample output obtained from this simulation.

Test Run 2

I did a second test run with a smaller graph-rate so that the transitions are seen more clearly. The inputs used were:

x-width = 0.01

t-width = 0.01

total_time = 2

graph_rate = 2

Please see the folder “run2” which contains image files graph1.png to graph101.png for the sample output obtained from this simulation.