

ES 314 Advanced Programming, Modeling and Simulation

Fall 2012

Home Work # 1

Due: September 10, 2012

Instructions for submission: (1) type-set your solution by taking the screen shot of the Matlab session in which your code is tested with at least two inputs. (For problems 1 and 4, there is no input so just show the output. (2) prepare all your solutions in a single document, print a hard-copy and bring it to class.

1) Write a one-line command in Matlab that produces the 26 capital letters of the alphabet. That is, the output to your command should be ABCDEFGHIJKLMNOPQRSTUVWXYZ. However, the expression cannot be simply:

```
>> 'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
```

Instead, the command should have less than 10 characters.

2) Write a code segment in Matlab that has the effect of retaining only the first k items of vector A that are in ascending order. Your code should work for vectors of any length.

```
>> a = [1 3 5 7 6 11 2 21];  
>> <your code here>           % one line solution exists  
ans =  
    1 3 5 7  
>>
```

3) Write a statement in Matlab to accomplish the following effect:

```
>> x = [1 4 12 9 23 18];  
>> <your code>  
  
ans =  
  
    1 12 23 4 9 18
```

i.e., arrange x so that all numbers in odd positions of x are moved to the front. Your code should work vectors of all lengths, not just 6.

- 4) Write a script in Matlab to draw: the triangle connecting the points $A(2, 6)$, $B(1, 9)$ and $C(5, 11)$. Then draw the circumcircle through the points A , B and C . (Hint: Draw the perpendicular bisectors of the line segments AB and BC , find the point of intersection O . Draw a circle with O as center, and passing through O . Your submission should include the script as well as the screen shot of the output when the script is run.