Patrick Utz
Dr. Huang

ENGR 160 Algorithms and Applications Sec 02 Spring 2018

Homework Assignment #1 Due 9:10am Jan 12 (F)

1. Read through the end of Chapter 1 (page 30) of the textbook and work through the examples given in the book. You should type the statements into the MATLAB command window and see what they do. Take the time to understand why you get the results. You do not have to submit any of this work.

2 Solve the problems in Practice 1.1 through Practice 1.6 in the book. Submit the commands you typed and the results returned by MATLAB. Do NOT submit any results of the **help** command

1.1

1/2 = .5
-5^2 = -25
(-5) ^ 2 = 25
10 - 6/2 = 7
5*4/2*3 = 30

```
>> 1/2

ans =

    0.5000

>> -5^2

ans =

   -25

>> (-5)^2

ans =

    25

>> 10-6/2

ans =

     7

>> 5*4/2*3

ans =

    30
```

1.2

```
>> format compact
>> low = 0;
>> high = 1;
>> rand*( high - low ) + low
ans =
    0.8147
>>
>> low = 0;
>> high = 100;
>> rand*( high - low ) + low
ans =
   90.5792
```

```
>> low = 20;
>> high = 35;
>> rand*(high - low) + low
ans =
   21.6668
>>
>> randi([1,100])
ans =
    26
>>
>> randi([20,35])
ans =
    26
```

1.3

3 == 5 + 2	= log 0
‘b’ < ‘a’ + 1	= log 0
10 > 5 + 2	= log 1
(10 > 5) + 2	= 3
‘c’ == ‘d’ -1 && 2 < 4	= log 1
‘c’ == ‘d’ -1 || 2 > 4	= log 1
xor (‘c’ == ‘d’ -1, 2 > 4)	= log 1
xor (‘c’ == ‘d’ -1, 2 < 4)	= log 0
10 > 5 > 2	= log 0

```
>> 3 == 5 + 2
ans =
  logical
   0
>> 'b' < 'a' + 1
ans =
  logical
   0
>> 10 > 5 + 2
ans =
  logical
   1
>> (10 > 5) + 2
ans =
     3
>> 'c' == 'd' -1 && 2 < 4
ans =
  logical
   1
>> 'c' == 'd' -1 || 2 > 4
ans =
  logical
   1
>> xor ('c' == 'd' -1, 2 > 4)
ans =
  logical
   1
>> xor ('c' == 'd' -1, 2 < 4)
ans =
  logical
   0
>> 10 > 5 > 2
ans =
  logical
   0
```

1.4

```
>> intmin ('int16')
ans =
  int16
   -32768
>> intmax ('int16')
ans =
  int16
   32767
>>
>> intmin ('uint16')
ans =
  uint16
   0
>> intmax ('uint16')
ans =
  uint16
   65535
```

```
>>
>> patrick = 7
patrick =
     7
>> whos
  Name          Size              Bytes  Class     Attributes

  patrick       1x1                   8  double

>> patrick = int32( patrick )
patrick =
  int32
   7
>> whos
  Name          Size              Bytes  Class    Attributes

  patrick       1x1                   4  int32
```

Range of int 16: (-32768, 32767)
Range of uint16: (0, 65535)

1.5

```
>> double( 'x' )
ans =
   120
>> char( 107 )
ans =
    'k'
```

The numerical equivalent of ‘x’ is 120 whereas the letter equivalent of 107 is ‘k’

1.6 fix: rounds towards 0
floor: rounds towards minus infinity
ceil: rounds towards plus infinity
round: rounds towards nearest integer

Tests:

```
>> fix ( 3.4 )
ans =
     3
>> fix ( .5 )
ans =
     0
>> fix ( -.5 )
ans =
     0
>> fix ( -3.4 )
ans =
    -3
>>
```

```
>> floor ( 3.4 )
ans =
     3
>> floor ( .5 )
ans =
     0
>> floor ( -.5 )
ans =
    -1
>> floor ( -3.4 )
ans =
    -4
>>
>>
>>
>> ceil ( 3.4 )
ans =
     4
>> ceil ( .5 )
ans =
     1
>> ceil ( -.5 )
ans =
     0
>> ceil ( -3.4 )
ans =
    -3
>>
>>
>>
>> round ( 3.4 )
ans =
     3
>> round ( .5 )
ans =
     1
>> round ( -.5 )
ans =
    -1
>> round ( - 3.4 )
ans =
    -3
```