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Assignment 1
Zagrodzki; CSCI 1320-112

Assignment 1 – MATLAB Intro

Part 1) Integer Types

	Integer Type	Min	Min Calc	Max	Max Calc
Signed	int8	-128	$-1*2^8/2$	127	$(2^8 / 2) - 1$
	int16	-32768	$-1*2^{16}/2$	32767	$(2^{16} / 2) - 1$
	int32	-2147483648	$-1*2^{32}/2$	2147483647	$(2^{32} / 2) - 1$
	int64	-9223372036854775808	$-1*2^{64}/2$	9223372036854775807	$(2^{64} / 2) - 1$
Unsigned	uint8	0	0	255	$2^8 - 1$
	uint16	0	0	65535	$2^{16} - 1$
	uint32	0	0	4294967295	$2^{32} - 1$
	uint64	0	0	18446744073709551615	$2^{48} - 1$

Part 2) Rounding

Fix – Drops the decimal places off the number

Floor – Rounds down to the nearest whole number that is less than the input value.

Ceil – Rounds up to the nearest whole number that is greater than the input value.

Round – Rounds to the nearest whole number to the input value. This is standard rounding.

1. fix(6.5) = floor(6.5)
   These both return 6
2. fix(3.3) ≠ fix(-3.3)
   These return different values: 3 and -3 respectively
3. fix(4.2) = floor(4.2)
   These both return 4
4. fix(-5.3) ≠ floor(-5.3)
   These return different values: -5 and -6 respectively
5. fix(-7.2) = ceil(-7.2)
   These both return -7
6. round(-2.4) ≠ floor(-2.4)
   These return different values: -2 and -3 respectively
7. round(-8.4) = ceil(-8.4)
   These both return -8

Part 3) Expression Evaluation

```
>> 3\9
        ans = 3

>> - 5 ^ 2
        ans = -25

>> (-5) ^ 2
        ans = 25

>> 10-6/2+3
        ans = 10

>> 3 == 5 + 2
        ans = 0

>> 'b' >= 'c' – 1
        ans = 1

>> 7 == 6 + 1
        ans = 1

>> xor(5 < 6, 8 > 4)
        ans = 0

>>xor('c' == 'd' - 1, 2 > 4)
        ans = 1
```

Part 4) Random Expressions

A. Real Number in range (0, 25)
   >> 25*rand()
B. Real Number in range (20, 50)
   >> 20+30*rand()
C. Integer in the inclusive range 1 to 10
   >> randi([1,10])
D. Integer in the inclusive range 0 to 10
   >> randi([0,10])
E. Integer in the inclusive range 50 to 100
   >> randi([50,100])

Part 5) Random Tasks

A. Two variables, x and y, that will store positive or negative integers
   >> x = int8(0);
   >> y = int8(0);
B. Return true if the value of x is greater than five or if the value of y is less than ten, but not if both are true
   >> xor(x>5,y<10)

Part 6) Making 9 with 2 & 3

1) >> 3^2
2) >> 3*3
3) >> 3+3+3
4) >> 2+2+2+3
5) >> 2+2+2+2+2+2-3
6) >> 3*2+3
7) >> 2^3 + 3
8) >> ((2+3)^2 + 2)/3
9) >> (2^2^2+2)/2
10) >> (2+(2/2))^2
11) >> (2/2)+(2/2)+(2/2)+(2/2)+(2/2)+(2/2)+(2/2)+(2/2)+(2/2)
12) >> randi([3*3,3^2])
13) >> floor(((2+3)^2+2^2)/3)
14) >> fix(((2+3)^2+2^2)/3)
15) >> mod((3*(2^3 +3+2)),2*(2+3))
16) >> mod(intmax('int32'),(2+3)*2)+2