Henry Meyerson

109190761

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\*28 /2 | 127 | (28 / 2) - 1 |
| int16 | -32768 | -1\*216 /2 | 32767 | (216 / 2) - 1 |
| int32 | -2147483648 | -1\*232 /2 | 2147483647 | (232 / 2) - 1 |
| int64 | -9223372036854775808 | -1\*264 /2 | 9223372036854775807 | (264 / 2) - 1 |
| Unsigned | uint8 | 0 | 0 | 255 | 28 - 1 |
| uint16 | 0 | 0 | 65535 | 216 - 1 |
| uint32 | 0 | 0 | 4294967295 | 232 - 1 |
| uint64 | 0 | 0 | 18446744073709551615 | 248 - 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

1. fix(3.3) ≠ fix(-3.3)

These return different values: 3 and -3 respectively

1. fix(4.2) **=** floor(4.2)

These both return 4

1. fix(-5.3) ≠ floor(-5.3)

These return different values: -5 and -6 respectively

1. fix(-7.2) = ceil(-7.2)

These both return -7

1. round(-2.4) ≠ floor(-2.4)

These return different values: -2 and -3 respectively

1. 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**

1. Real Number in range (0, 25)

>> 25\*rand()

1. Real Number in range (20, 50)

>> 20+30\*rand()

1. Integer in the inclusive range 1 to 10

>> randi([1,10])

1. Integer in the inclusive range 0 to 10

>> randi([0,10])

1. Integer in the inclusive range 50 to 100

>> randi([50,100])

**Part 5) Random Tasks**

1. Two variables, x and y, that will store positive or negative integers

>> x = int8(0);

>> y = int8(0);

1. 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