20180101S SHANTANU TYAGI

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CS374 Lab1

Prob1.

```
r = input('enter radius')
h = input('enter height')
SA = 2*pi*r*(r+h)
```

Output = 1.25586e+03

Prob2.

(i) a = zeros(4,5) m=4, n=5

(ii) a = ones(4,5) m=4, n=5

(iii) a = eye(4,4) m = n = 4

For square matrix only the diagonal is defined.

Prob3.

```
minimum = min(A(:))
maximum = max(A(:))
```

(Refer codes at end)

Prob4.

$$\begin{bmatrix} x_1 \\ x_3 \\ x_3 \end{bmatrix} = \begin{bmatrix} c_1 & c_2 & c_3 \\ c_4 & c_5 & c_6 \\ c_7 & c_8 & c_9 \end{bmatrix}^{-1} \begin{bmatrix} A \\ B \\ C \end{bmatrix}$$

(Refer code)

Prob5. (Refer code)

$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 0.3018 \\ -0.0473 \\ -0.4558 \end{bmatrix}$$

Prob6.

$$C = A + B$$

Prob7.

$$\varepsilon_n \leq \frac{e}{L^n} \leq 0.001$$

$$\Rightarrow n \geq 7$$

for error to be within given bounds

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Prob8. a.) Prints 3rd element i.e. 5

b.) Prints elements from position 1 to 7 i.e. all elements.

c.) Prints all elements from position 1 to the last index.

d.) Prints all elements except the last one

e.) Prints 6th, 4th and 2nd elements. Because. starting index = 6, ending index = 1, step = -2

f.) Prints 1st, 6th, 2nd, 1st, 1st elements. respectively

g.) Sum of all the elements in the array is printed = 33

Prob9 a.) `x1 = A(1, :)`

b.) `y = A([2,3], :)`

c.) `sum(A)`

d.) `sum(A')`

e.) `se = [std(A(:,1)), std(A(:,2)), std(A(:,3))]./sqrt(3)`

Prob10. a.) works

b.) works

c.) works

d.) No ~~dece~~ because dimensions do not match

e.) No because for concat, dimensions must match

f.) works

g.) works

Prob11.

a.) Transpose of the matrix

b.) Prints all rows but only column for with index 1 and 4

c.) Prints row 2 and row 3 but only the columns 3 and 1 for these rows.

d.) reshapes the matrix into a new matrix of 2 rows and 6 columns taking colum-wise entries from original matrix and filling them column-wise in the reshaped matrix

e.) Prints the entire matrix as a single column with elements taken row-wise

f.) flips the rows in up-down direction

g.) flips the columns in left-right direction

h.) Error because dimensions don't match

(i) Prints all rows from 1 to 3 and prints all column entries for each row.

(j) Concats new rows below the original matrix A. These rows are the rows from 1 to 2 and have all column elements.

k.) Sum of all column elements as a row vector

l.) Sum of all row elements as a row vector.

m.) Sum of all row elements as a column vector

p.) Concates sum of all rows as a new column, sum of all columns as a new row and and finally shows sum of all the elements at the last index

Prob12. (a) avg = sum(F)/5 (column wise average)

(b) s = std(F) (column wise standard deviation)

(c) tscores = ttest(F) (gives all zero vector)

Prob13

Prob 13. (a) sum(x)

(b) cumsum(x)

(c) sin(x)