Experiment 2

Introduction to SCILAB Part (II)

Question 1

Code

*// Bajrang 363*

*// Section 1 Question 1*

A = [5,2,4; 1,7,-3; 6,-10,0];

disp(“A = “ ,A)

B = [11,5,-3; 0,-12,4; 2,6,1];

disp(“B = “,B)

C = [7,14,1; 10,3,-2; 8,-5,9];

disp(C)

*// Part A*

dA = det(A)

dB = det(B)

dC = det(C)

disp(dA,"Determinant of A = ")

disp(dB, "Determinant of B = ")

disp(dC, "Determinant of C = ")

*// Part B*

solb1 = (A+B)\*C;

solb2 = 5\*A+B\*C;

disp(solb1, "(A+B)C = ")

disp(solb2, "5A+BC = ")

*// Part C*

ab = A\*B;

ba = B\*A;

disp(ab, "A\*B = ")

disp(ba, "B\*A = ")

if ab==ba then

disp("A\*B and B\*A are equal.");

else

disp("A\*B and B\*A are not equal.");

end

*// Part D*

adc = A/C;

cda = A\C;

disp(adc, "A/C = ")

disp(cda, "A\C = ")

*// Part E*

abt = (A\*B)'

atbt = (A')\*(B')

bat = (B\*A)'

disp(abt,"(AB)t = ")

disp(atbt, "AtBt = ")

disp(bat, "(BA)t = ")

if abt == atbt & abt ~= bat then

disp("(AB)t = (A)t(B)t != (BA)t");

elseif abt == atbt & abt == bat then

disp("(AB)t = (A)t(B)t = (BA)t");

else

disp("(AB)t != (A)t(B)t = (BA)t");

end

*// Part F*

At = A';

Bt = B';

atpbt = At + Bt;

apbt = (A + B)';

if atpbt == apbt then

disp("(A)t + (B)t = (A+B)t")

disp(At,"(A)t = ")

disp(Bt, "(B)t = ")

end

*// Part G*

if dA ~= 0 then

disp("A is invertible")

disp(inv(A), "A inverse is ")

else

disp("A is not invertible.")

end

if dB ~= 0 then

disp("B is invertible")

disp(inv(B), "B inverse is ")

else

disp("B is not invertible.")

end

if dC ~= 0 then

disp("C is invertible")

disp(inv(C), "C inverse is ")

else

disp("A is not invertible.")

end

*// Part H*

P = A\*C

Q = A.\*C

disp(P, "P = A\*C = ")

disp(Q, "Q = A.\*C = ")

if P == Q then

disp("A\*C = A.\*C", "P and Q are equal.")

else

disp("P and Q are not equal.")

end

Output

--> exec('C:\Users\system13\Desktop\B\_363\Assignment2\e2s1q1.sce', -1)

“A = “

5. 2. 4.

1. 7. -3.

6. -10. 0.

“B = “

11. 5. -3.

0. -12. 4.

2. 6. 1.

“C = “

7. 14. 1.

10. 3. -2.

8. -5. 9.

Determinant of A =

-394.

Determinant of B =

-428.

Determinant of C =

-1439.

(A+B)C =

190. 240. 11.

-35. -6. 20.

24. 95. 25.

5A+BC =

128. 194. -6.

-83. -21. 45.

112. -9. -1.

A\*B =

63. 25. -3.

5. -97. 22.

66. 150. -58.

B\*A =

42. 87. 29.

12. -124. 36.

22. 36. -10.

A\*B and B\*A are not equal.

A/C =

0.2939541 -0.0298819 0.4051425

0.3495483 0.1299514 -0.343294

-0.8075052 0.9284225 0.2960389

A\C =

2.2385787 0.9390863 0.6497462

0.5431472 1.0634518 -0.5101523

-1.319797 1.7944162 -0.3071066

(AB)t =

63. 5. 66.

25. -97. 150.

-3. 22. -58.

AtBt =

42. 12. 22.

87. -124. 36.

29. 36. -10.

(BA)t =

42. 12. 22.

87. -124. 36.

29. 36. -10.

(AB)t != (A)t(B)t = (BA)t

(A)t + (B)t = (A+B)t

(A)t =

5. 1. 6.

2. 7. -10.

4. -3. 0.

(B)t =

11. 0. 2.

5. -12. 6.

-3. 4. 1.

A is invertible

A inverse is

0.0761421 0.1015228 0.0862944

0.0456853 0.0609137 -0.0482234

0.1319797 -0.1573604 -0.0837563

B is invertible

B inverse is

0.0841121 0.0537383 0.0373832

-0.0186916 -0.0397196 0.1028037

-0.0560748 0.1308411 0.3084112

C is invertible

C inverse is

-0.0118138 0.0910354 0.0215427

0.0736623 -0.038221 -0.0166782

0.0514246 -0.1021543 0.0826963

P = A\*C =

87. 56. 37.

53. 50. -40.

-58. 54. 26.

Q = A.\*C. =

35. 28. 4.

10. 21. 6.

48. 50. 0.

P and Q are not equal.

Question 2

Code

Output