

# 1 Problem 1

```
clear;clc;

% Create arrays
a = [1,3,5,9;9,1,1,1;0,0,10,3];
b = [1;1;9];
c = [10,11,12,9];

d = b+a(:,2);
disp('d = ')
disp(d);

f = c+a(1,:);
disp('f = ')
disp(f);

g = [b(1)+a(1,:);b(2)+a(2,:);b(3)+a(3,:)];
disp('g = ')
disp(g);

h = [b',c];
disp('h = ')
disp(h);
```

## 2 Problem 2

```
% R(Gas constant for air) is in units of J/(kg*K)
% P(Pressure) is in units of Pa
% T(Temperature) is in units of K
% rho(Mass density) is in units of kg/m^3

clear;clc;

% Using meshgrid w/o pre-allocating p,t arrays
[P,T] = meshgrid(50e3:10e3:150e3,250:10:350);
% Gas constant
R = 287.05;
% Calculation
rho = P./(R.*T);

% Do the value of rho column wise vary by temperature change or pressure
% change? What about row wise?
```

### 3 Problem 3

```
clear;clc;

Student1 = [99;90;98;80;98];
Student2 = [85;65;95;85;77];
Student3 = [67;69;97;89;87];
Quizes = {'Quiz1','Quiz2','Quiz3','Quiz4','Quiz5'};
T = table(Student1,Student2,Student3,'Rownames',Quizes);
% disp(T)

Mean_Quiz_Scores = [(Student1(1)+Student2(1)+Student3(1))/3, (Student1(2)+Student2(2)+Student3(2))/3, ...
    (Student1(3)+Student2(3)+Student3(3))/3, (Student1(4)+Student2(4)+Student3(4))/3, ...
    (Student1(5)+Student2(5)+Student3(5))/3];

Mean_Student_Scores = [(sum(Student1))/numel(Student1), (sum(Student2))/numel(Student2), ...
    (sum(Student3))/numel(Student3)];

Mean_Mean_Quiz_Scores = sum(Mean_Quiz_Scores)/numel(Student1);
Mean_Mean_Student_Scores = sum(Mean_Student_Scores)/3;

if Mean_Quiz_Scores(5) > Mean_Quiz_Scores(4)
    disp('Quiz 5 was easy')
end

if (max(Student3) > max(Student2)) && (max(Student3) > max(Student1))
    disp('Student 3 is my hero')
    disp('Student 3 recieved the best quiz score')
else
    disp('Student 3 is a zero')
end

if (max(Student2) > max(Student1)) && (max(Student2) > max(Student3))
    disp('Student 2 recieved the best quiz score')
elseif (max(Student1) > max(Student2)) && (max(Student1) > max(Student3))
    disp('Student 1 recieved the best quiz score')
end
```

## 4 Problem 4

```
clear;clc

A = input('Choose a number for the variable A: ');
B = input('Choose a number for the variable B: ');
C = input('Choose a number for the variable C: ');
A1 = A; B1 = B;

if A > B
    A = B1; B = A1;
else
    A = A1; B = B1;
end

if B > A && B > C
    B = 0;
else
    B = 100;
end

if C < 0
    C = 0;
end

fprintf('A = %d \n',A)
fprintf('B = %d \n',B)
fprintf('C = %d \n',C)
```

## 5 Problem 5

```
clear;clc;

Test_Score = input('What is your test score?: ');

if Test_Score < 60
    disp('You are kicked out of the class')
elseif Test_Score >= 60 && Test_Score <= 90
    disp('You are an average student')
else
    disp('You are a champion!')
end
```

## 6 Problem 6

```
clear;clc;

Name = input('What is your name? ','s');

switch Name
    case 'Paul'
        disp('You may be the instructor of MAE-10')

    case 'John'
        disp('You have four letters in your name')

    case 'Bill'
        disp('You have four letters in your name')

    case 'Susan'
        Num = input('Pick a number Susan. Number = ');

        if Num > 10
            disp('Hello!')

        else
            disp('Bye!')

        end

    otherwise
        disp('You should eat a taco')
end

% How could this code be written to account for the names not being
% capitalized?
```