

Practice Problems:

%% PRACTICE PROBLEMS:

1) FIND THE ERROR:

```
clc; clear;

for i = 1:2
    switch(i)
        case(1)
            j = 2;
            while j < 4
                j = j + 1 / 2
            end
        case(2)
            % N is an integer;
            N = 3;
            mult = 1;
            for i = 1:N
                mult = mult * i
            end
        end
    end
end
```

2) FIND THE ERROR:

```
clc; clear;

MAT = 1;

for i = 1:10
    MAT(i) = i;
    fprintf('%2i%2i%2i%2i%2i%2i%2i%2i%2i /n', MAT)
    fprintf(' /n')
    char = 'hello world!'
    fprintf('%s /n', char)
end
```

3) FIND THE ERROR:

```
a = 2;
b = 4;
c = 1:4;
for i = 1:a
    for k = b:-1:1
        v = abs(i*k);
        if v == 6
            disp(c(v))
        end
    end
end
end
```

4) FIND THE ERROR:

```
scores = [88,92,96,74,99];
studentID = [12,15,11,8,14];
a = [studentID;scores]
fprintf('Student ID #%d got a score of: %d,a)
```

5) WRITE THE OUTPUT:

```
clc; clear;

% Following is a temperature array:
T = [100 200 300 400 500 600];
% Next is a pressure array:
P = [1000 2000 4000 5000 6000 7000];
i = 0;
while i < numel(T)
    i = i + 1;
    fprintf('Temp %i = %3.1i \n', i, T(i))
    j = 0;
end
while j < numel(P)
    j = j + 1;
    fprintf('Pres %i = %3.1i \n', j, P(j))
end
```

6) WRITE THE OUTPUT:

```
clc; clear;
one = 'this'; two = 'is'; three = 'a'; four = 'full'; sentence = '5';
fprintf('%-10s \n', one, two, three, four, sentence)
```

7) WRITE THE OUTPUT:

```
s(1) = 1;
for i = 2:5
    s(i) = s(i-1) * i;
end

i=0;
while i < 1
    i = i + 1;
    fprintf('The %d value of S is: %d \n',i,s)
end
```

8) FREE RESPONSE:

Consider the following table (which is originally a .txt file called "MAT.txt"):

1	2	3
4	5	6

Extract this table from the .txt file and store it into the matrix called MAT.

9) FREE RESPONSE:

A student is tired of computing out the slopes and distances between two points. They want to write their own MATLAB function to do so and return two variables: slope and dis. Write a program named PointCalc to do this task when passed point data as such: (x_1, y_1, x_2, y_2) .

ANSWERS (PLEASE DON'T LOOK UNTIL YOU HAVE FINISHED)

Question 1: NO ERROR

- There is no error in this code. The switch case is in the correct form, and all variables in the loop are defined prior to each loop (and nested loop) being performed.

Question 2: NO ERROR:

- You may think that since there is a “/n” instead of a “\n” in the fprintf inputs, there would be an error. However, MATLAB just treats /n as part as the string. If there was a \n, however, then the output would proceed to the next line when the code encounters the \n while performing the fprintf.

Question 3: Errors Present

- Error in the variable V, as we run through the first value of i all values of v are within the dimensions of the c matrix but when i = 2 and b = 4 we exceed the dimensions of c which will create an error.

Question 4: Errors Present

- There are two possible errors.
 1. In a = [stuentid;scores] the intent is to combine the matrices for studentID and scores but when we are calling studentID we have a lowercase id which MATLAB will interpret as a different variable that is not defined.
 2. In the fprintf the formatspec does not have " around it.

Question 5: Note, underscores indicate spaces. DO NOT FORGET TO PUT UNDERSCORES WHEN THERE IS A SPACE.

Temp_1_=_100_

Temp_2_=_200_

Temp_3_=_300_

Temp_4_=_400_

Temp_5_=_500_

Temp_6_=_600_

Pres_1_=_1000_

Pres_2_=_2000_

Pres_3_=_4000_

Pres_4_=_5000_

Pres_5_=_6000_

Pres_6_=_7000_

Question 6:

This_ _ _ _ _

is_ _ _ _ _

a_ _ _ _ _

full_ _ _ _ _

5_ _ _ _ _

Question 7:

The_1_value_of_S_is:_1_

The_2_value_of_S_is:_6_

The_24_value_of_S_is:_120_

Question 8:

Here is one possible solution. Note that after the fscanf transposed our matrix in the text file MAT.txt. In order to correct for this, the matrix MAT was transposed (As seen in the line after the fscanf).

```
fileID = fopen('MAT.txt', 'r');  
MAT = fscanf(fileID, '%i\n', [3, Inf]);  
MAT = MAT'  
fclose(fileID);
```

Question 9:

This is one possible answer, there are many possible answers.

```
function (slope,dis)=PointCalc(x1,y1,x2,y2)  
delX = x2-x1  
delY = y2-y1  
slope = delY/delX  
dis = sqrt(delx^2+dely^2)  
end
```