```
% Week #4 (M/Tu)

clear;clc;

% Loops
A = [3 2 1; 1 5 3];
% Want to multiply all elements together
MultA = 1;
[m,n] = size(A);
for i = 1:m
    for j = 1:n
        MultA = MultA*A(i,j);
    end
end
disp('MultA = ');
disp(MultA);

% Or more efficiently I can use 1 for loop for this case
MultA = 1;
N = numel(A);
for i = 1:N
    MultA = MultA*A(i);
end
disp('MultA = ');
disp(MultA);

% What about while loops?
MultA = 1;
i = 1;
N = numel(A);
while i <= N % forwards w/i
    MultA = MultA*A(i);
    i = i+1;
end
disp('MultA = ');
disp(MultA);

MultA = 1;
i = numel(A);
while i > 0 % backwards w/i
    MultA = MultA*A(i);
    i = i-1;
end
disp('MultA = ');
disp(MultA);
```

```matlab
% Review spot the error (comment out so students can't see red lines)
A = ones(1,3);
B = [ 1 1 1; 1 1 1];
C = [2 2; 1 1];
D = B(:,1:2) + C;
B(1,:) = B(1,:) + A;
D = D(1,:) + [A(1) A(2)];
disp('D' '=');
disp('D');
% error with array sizes or displays?

% Does this next block of code run? Overall errors?
A = 1; B = 2; C = 'false'; % error?
if A > 0
   A = A == 1; % error?
   B = 2;
end
if B < 0
   A = X; % error?
elseif C == 0
    C = true; % error?
else
   Hi = 'hi';
   'bye' % error?
end
% Did the code run? If it did run, what would make the code not run?

City = 'Hi';
switch City
   case 'hi'
       disp('San Diego')
   case City % error?
       disp('Irvine')
   otherwise
       disp('L.A.')
end
```

```matlab
% Exact Output
A = 2*2.*1/4/3+1
B = 1/1*(2/3)*3/2
C = 1+8/4+2*(7/7)
% How are the answers displayed in the command window?

A = 3*ones(1,3);
disp('')
disp('A(1) = ')
disp(A(1));
disp(A(1,:))
disp('')
disp('')
disp('')
disp(A(1))
% Will there be a bunch of spaces?

A = 1; B = true; C = 5; D = false;
AA = B == D
BB = (C > A) && B
CC = xor(AA,AA == BB)
% What is the logical output and how will it be displayed in the command window?


% Question
% Write a code that ask the user to input the name of a shape. If the shape
% is a circle, rectangle, or triangle, ask the user for the dimensions of the
% shape (i.e. circle/Circle -> radius, rectangle/Rectangle -> length & width,
% triangle/Triangle -> base & height). Calculate the perimeter and area of the shape.
% Tell the user the results.
```

```
disp('Please input the name of a shape.');
Shape = input('Shape = ','s');
switch Shape

    case 'Circle'
        disp('What is the radius of the circle');
        r = input('radius = ');
        P = 2*pi*r;
        A = pi*(r^2);
        disp(P);
        disp(A);

    case 'circle'
        disp('What is the radius of the circle?');
        r = input('radius = ');
        P = 2*pi*r;
        A = pi*(r^2);
        disp(P)
        disp(A)

case 'Rectangle'
        disp('What are the dimensions?')
        l = input('length = ');
        w = input('width = ');
        P = 2*l + 2*w;
        A = l*w;
        disp(P)
        disp(A)

case 'rectangle'
        disp('What are the dimensions?')
        l = input('length = ');
        w = input('width = ');
        P = 2*l + 2*w;
        A = l*w;
        disp(P)
        disp(A)

case 'Triangle'
        disp('What are the dimensions?')
        b = input('base = ');
        h = input('height = ');
        disp('Need more info about triangle to calculate perimeter. Sorry :(')
        A = .5*b*h;
        disp(A)
```

```
case 'triangle'
        disp('What are the dimensions?')
        b = input('base = ');
        h = input('height = ');
        disp('Need more info about triangle to calculate perimeter. Sorry :(')
        A = .5*b*h;
        disp(A)

otherwise
        disp('IDK')
end
```

% Can I make my string not case sensitive?

% Week #3 (F)

% Spot the error:

```
%%1
num=input(enter a positive number);
X=SQRT(num);
Y=x+5;
```

% Correct Answer:

```
num=input('enter a positive number');
X=sqrt(num);
Y=X+5;
```

```
%%2
X=Input('enter a value for x);
switch x
    case x>3
        x=x+4;
end
    case x==5
        x=6*x;
end
Display(x);
```

% Correct Answer:
```
X=input('enter a value for x');
switch X
    case {3,6}
        x=X+4
    case 5
```

```
        x=6*X
    otherwise
        x=X
end

%%3
Prompt='please enter an array'
A=input(prompt)
[M,N]=Size(A);
if M=N
    Disp(you have a square matrix);
elseif
     Disp(you do not have a square matrix);
end
end

% Correct Answer:
prompt='please enter an array';
A=input(prompt);
[M,N]=size(A);
if M==N
    disp('you have a square matrix');
else
 disp('you do not have a square matrix');
end

%%4
x=pi/2;
y=-pi;
Z=[sin(x) cos(y)]; %No Error


A=[1, 2, 3; 4 5 6]
B=[8 7 9 ;8 7 6]
C=A*B % -----? This is not allowed matrix dimension does not match!
H=A.*B
```

```matlab
% Print the Exact output:

% Part A)
X1=9+9*10^2/5+5
X2=9+(9*10^2/5)+5
X3=(9+9)*10^2/5+5
X4=9+9*10^2/(5+5)
X5=(9+9)*10^2/(5+5)
X6=2^1/3*2+8
X7=2^1/(3*2)+8
X8=4^(1/2)/3*2+8

% Part B)
A=[1, 2, 3; 4 5 6]
B=[8 7 9 ;8 7 6]
C=[1:2:10]
H=A.*B
C=[H' B' A' ]
D=[A(:,1),A(:,3)]

% Part C)
x=0;
y=1;
w=2;
z=xor(w,y)
Z= z &(x|y)
A=z+Z

% Go over the exact output of each part (exactly as it would appear in the command window)
```