

Class_Work_9

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General

Conditional Statements

if: Conditionally execute statements

The if statement evaluates a logical expression

```
%and executes a group of statements when the expression is true.
% if cond
%     statement_list
% end
```

```
% a=input('a=?');
a=6;
if a<9
    disp('small')
end
```

small

if-else statement

if (cond) statement_list1 else statement_list2 end

```
%a=input('a=?');
if a<9
    disp('small')
else
    disp('Big')
end
```

small

elseif

The optional elseif and else keywords provide for the execution of alternate groups

of statements. if cond(1) statement_list(1) elseif cond(2) statement_list(2) elseif
cond(3) statement_list(3) : : : else statement_list(0) end

```
%a=input('a=?');
a=17;
if a<9
    disp('small')
elseif a< 11
    disp('medium')
else
    disp('Big')
end
```

Big

class assignment_9,1

See quadroots.m

```
%(a)
a=2; b=8; c=-3;
The eq. has 2 roots:
r1=0.34521,    r2=-4.3452

%(b)
a=15; b=10; c=5;
The eq. has no real roots

%(c)
a=18; b=12; c=2;
The eq. has 1 root:
r=-0.33333
```

Undefined function or method 'The' for input arguments of type 'char'.

Error in ==> class_work_9 at 59
The eq. has 2 roots:

For: Execute block of code specified number of times

Syntax for variable = array statements end In the for loop, array can be any vector or array of values. The for loop works like this: variable is set to the first value in array, and the sequence of MATLAB commands

```
%in the body of the for loop is executed with this value of variable. Then variable is set to t
%and the sequence of MATLAB commands in the body of the for loop is executed with this value of
%This process continues through all of the values in array.
```

```
clc;clear all;
a=0;
for i=1:12
    a=a+1;
end
disp(['a= ' num2str(a)])
```

```
a=0;
v=[4 8 9 2 6]
for i=v
    if i>7
        a=a+i;
    end
end
```

a

Nested For Loops

```
a=0;
v=[4 8 9 2 6];
for i=v
    for j=1:4
        a=i*j
    end
end
```

Example: average with 2 neighbours

```
clc;clear all;
a=round(rand(5,7)*10);

for i=1:5
    for j=1:7
        if j==1||j==7 % except for the 1st and 7th columns
            a_new(:,j)=a(:,j);
        else
            a_new(i,j)=(a(i,j-1)+a(i,j)+a(i,j+1))/3;
        end
    end
end
a_new
```

class_assignment_9,2

```
clc;clear all;

for i=1:4
    for j=1:7
        m(i,j)=i+j;%each element is the sum of its indices
    end
end
m
```

While Loop: Repeatedly execute statements while condition is true

```
clear all;
a=1;flag=1;
while flag<10
    a=a*flag;
    flag=flag+1;
end
a
```

class_assignment_9,3

The smallest odd number that is divisible by 3 and whose cube is greater than 4000

```
clc; clear all
j=0;
i=1;
while j~=1
    i=i+2;
    j=( mod(i,3)==0) & (i^3>4000);
end
i
% another option
clc; clear all;
i=1;

while (( mod(i,3)==0) & (i^3> 4000)&mod(i,2)~=0 )~=1
```

```

        i=i+1 ;

end
i
% and one more.....
clc; clear all
j=0;
i=1;
while ~( ( mod(i,3)==0) & (i^3>4000))
i=i+2;

end
i

```

class_assignment_9,4-guess a number

```

a=round(rand(1)*1000);
x=input('guess a number between 0 to 1000 ');
num=0;
while (a~=x)
    num=num+1;
    if a>x
        x= input('your number is smaller than my, try again ');
    else
        x= input('your number is bigger than my, try again ');
    end
end
disp(['your gues is the right gues and you did it with ' num2str(num) ' guesses' ] )

a=round(rand(1)*1000);
b=-1;
num=0;
while a~=b
    b=input('guess number between 0 to 1000');
    num=num+1;
    if b>a
        disp('your number bigger than my')
    else
        disp('your number lower than my')
    end
end
disp(['you guessed thr right number, and you did it with ',num2str(num ),' guesses'])

```

class_assignment_9,5-fibonacci

see fibonacci.m

```
y=fibonacci(5)
```

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