```
function r = rec_mpower(a,n,m)
    if n == 0
        r = 1;
    elseif mod(n,2) == 0
        r = mod((rec_mpower(a,n/2,m)^2),m);
    else
        r = mod(mod((rec_mpower(a,(n-1)/2,m)^2),m)*mod(a,m),m);
    end
end
```

Q1

```
m = input("(m) Enter an integer (m >= 2): ")
```

```
m =
10
```

```
n = input("(n) Enter a non negative integer: ")
```

```
n =
5
```

```
a = input("(a) Enter an integer (1 <= a < m): ")
```

```
a =
6
```

```
if(a > m)
    fprintf("A must be between 1 and M")
else
    fprintf("my rec_mpower(%d,%d,%d) is %d",a,n,m,rec_mpower(a,n,m))
    fprintf("matlab powermod(%d,%d,%d) is %d",a,n,m,powermod(a,n,m))
end
```

```
my rec_mpower(6,5,10) is 6
matlab powermod(6,5,10) is 6
```

Q2

```
M = input("Enter the matrix in matlab syntax: ")
```

```
M = 3×3
     1     0     1
     1     0     1
     1     1     1
```

```
if(height(M) ~= width(M))
    fprintf("PLEASE ENTER A SQUARE MATRIX!!")
else
    if(trace(M) == 0)
        fprintf("The matrix is irreflxive")
    elseif(trace(M) == size(M))
```

```
        fprintf("The matrix is reflexve")
    else
        fprintf("The matrix is not reflxive")
    end
end
```

```
The matrix is not reflxive
```