

A 6.2

Vandermonde matrices in Julia. Write a function that takes a positive integer n and an m -vector t as inputs and generates the corresponding $m \times n$ Vandermonde matrix.

Solution:

A function that takes integer n and m -vector t

```
In [ ]: function generateVandermondeMatrix( n, t, V)
        for j = 1 : n
            V[:,j] = t.^(j - 1)
        end
    end
```

```
Out[ ]: generateVandermondeMatrix (generic function with 2 methods)
```

Initializing Empty matrix of size $m \times n$

```
In [ ]: println("Enter m and n for Vandermonde Matrix\nm : ")
        m = parse{Int64, readline()})
```

```
Enter m and n for Vandermonde Matrix
m :
```

```
Out[ ]: 4
```

```
In [ ]: println("n : ")
        n = parse{Int64, readline()})
```

```
n :
4
```

```
Out[ ]:
```

Initializing n -vector t

```
In [ ]: t = Vector{Int64}()
        println("Input the values of m-vector t : ")
        for i = 1 : m
            push!(t, parse{Int64, readline()})
        end

        t
```

```
Input the values of m-vector t :
```

```
Out[ ]: 4-element Vector{Int64}:
         1
         2
         3
         4
```

Initialize empty Vandermonde Matrix $m \times n$

```
In [ ]: V = zeros{Int64, m, n}
```

```
Out[ ]: 4×4 Matrix{Int64}:
         0  0  0  0
```

```
0 0 0 0
0 0 0 0
```

Generating Vandermonde Matrix

```
In [ ]: generateVandermondeMatrix(n, t, V)
V
```

```
Out[ ]: 4×4 Matrix{Int64}:
 1  1  1  1
 1  2  4  8
 1  3  9 27
 1  4 16 64
```