

A stylized illustration of a robot wearing a graduation cap and gown, standing in a classroom. The robot is holding a large scroll with code. In the foreground, several students are seated at desks with computers, looking towards the robot. The background shows a city skyline and floating gears.

MAT 275

Calculating Product of Odd Numbers in MATLAB

Introduction

This MATLAB script aims to calculate the product of odd numbers within a specified range, specifically from 1 to 19. By utilizing a for loop, the script iterates through the odd numbers and multiplies them together to obtain the final product.

Problem Statement

The objective is to create a script that efficiently calculates the product of odd numbers within a given range, providing a clear and concise solution.

Solution Steps

- **Initialize Variables:**
 - Declare a variable 'product' to store the final product of the odd numbers.
 - Define the range of odd numbers from 1 to 19 with a step size of 2 using the colon operator ('odd_no = 1:2:19').
- **For Loop Iteration:**
 - Utilize a for loop to iterate through the odd numbers within the specified range.
 - Multiply each odd number with the current product and update the product accordingly.
- **Calculate Product:**
 - After iterating through all odd numbers, the final product is obtained.

Pseudo Code

1. Clear all variables from memory.
2. Initialize the variable product to 1.
3. Create a vector odd_no containing odd numbers from 1 to 19 with a step size of 2.
4. For each element i in the vector odd_no, do the following:
 - Multiply the current value of product by i and assign the result back to product.
5. Output the final value of product.

MATLAB Code

```
clear all  
product=1;  
odd_no=1:2:19;  
for i=odd_no  
    product=product*i;  
end  
product
```

Code Explanation

- **clear all**
 - Clears all variables from the MATLAB workspace.
- **product = 1;**
 - Initializes the variable product to 1.
- **odd_no = 1:2:19;**
 - Creates a row vector odd_no containing odd numbers from 1 to 19 with a step size of 2.
- **for i = odd_no product = product * i;end**
 - Iterates through each element i in the vector odd_no.
 - Multiplies each element i with the current value of product and updates product with the result.
- **product**
 - Displays the final value of the variable product, which is the product of all odd numbers from 1 to 19.

Final Answer

The final output is the product of odd numbers within the range from 1 to 19.

```
Command Window
```

```
>> untitled
```

```
product =
```

```
654729075
```

```
>>
```


Additional Comments/Tips

The script is flexible and can be adapted to calculate the product of odd numbers within different ranges by modifying the 'odd_no' range.

Conclusion

The script demonstrates an efficient approach to calculating the product of odd numbers within a specified range, showcasing MATLAB's capability in handling mathematical operations effectively.