



CRUX



CODING  
BLOCKS

## Problem Solving

- Logistics
- Pseudo Codes

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# Logistics



- Piazza
- Whatsapp
- Laptops
- Assignments

# Course Content



- Basics of Problem Solving
- Programming Fundamentals
- Object Oriented Programming
- Data Structures



# Time for Brain Teasers!

# BT - 1: Hour Glasses



You have two hourglasses: a 7 minute one and a 11 minute one. Using just two hourglass, **accurately time 15 minutes.**



## BT – 2: Apples and Oranges



There are three closed and opaque cardboard boxes. One is labeled "APPLES", another is labeled "ORANGES", and the last is labeled "APPLES AND ORANGES". You know that the labels are currently disarranged, such that no box is correctly labeled. You would like to correctly rearrange these labels. To accomplish this, you may draw only one fruit from one of the boxes. **Which box do you choose, and how do you then proceed to rearrange the labels?**

# What is a Pseudocode?



Human readable informal description of a  
algorithm/program

# Why Learn It?



- Language Independent.
- Structure your code before writing it.
- Fastest way to verify.



# Lets define our own Pseudocode language



- Input [ read N ]
- Assignment [ Sum  $\leftarrow$  0 ]
- Output [ print Sum]
- If Else [ if I < N then ... end else then ... end ]
- While Loop [ while I < N do ... end ]
- Exit [exit]

# Check if a number is Prime?

```
read N
divisor ← 2
while divisor < N do
    if N is divisible by divisor then
        print "NOT PRIME"
        exit
    end
    divisor ← divisor + 1
end
print "IS PRIME"
exit
```



# Lets try one more problem!



- Write pseudo code to print following pattern!

```
1
2 3
4 5 6
7 8 9 10
```

# Pseudocode

```
read N
Row  $\leftarrow$  1
Value  $\leftarrow$  1
while Row  $\leq$  N do
    Col  $\leftarrow$  1
    while Col  $\leq$  Row do
        print Value
        Value  $\leftarrow$  Value + 1
        Col  $\leftarrow$  Col + 1
    end
    print "\n"
    Row  $\leftarrow$  Row + 1
end
exit
```



# Time to try?



- Write pseudocode to print the following pattern

\*

\* \* \*

\* \* \* \* \*

- Find reverse of a number
- Find Nth Fibonacci, where 0 is 0<sup>th</sup> and 1 is 1<sup>st</sup> Fibonacci number



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Thank you

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