

Algorithm Design & Problem Solving: Flowcharts & Pseudocode



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What is a flowchart?



- ❖ A **flowchart** is a graphical diagram which can be used to represent an algorithm

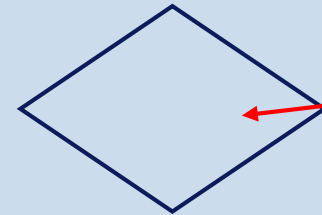
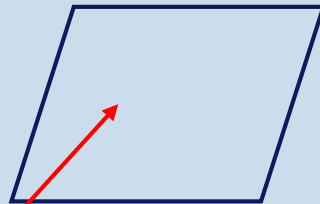
Symbols



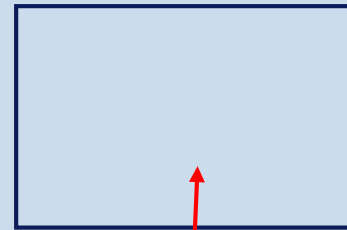
Terminal



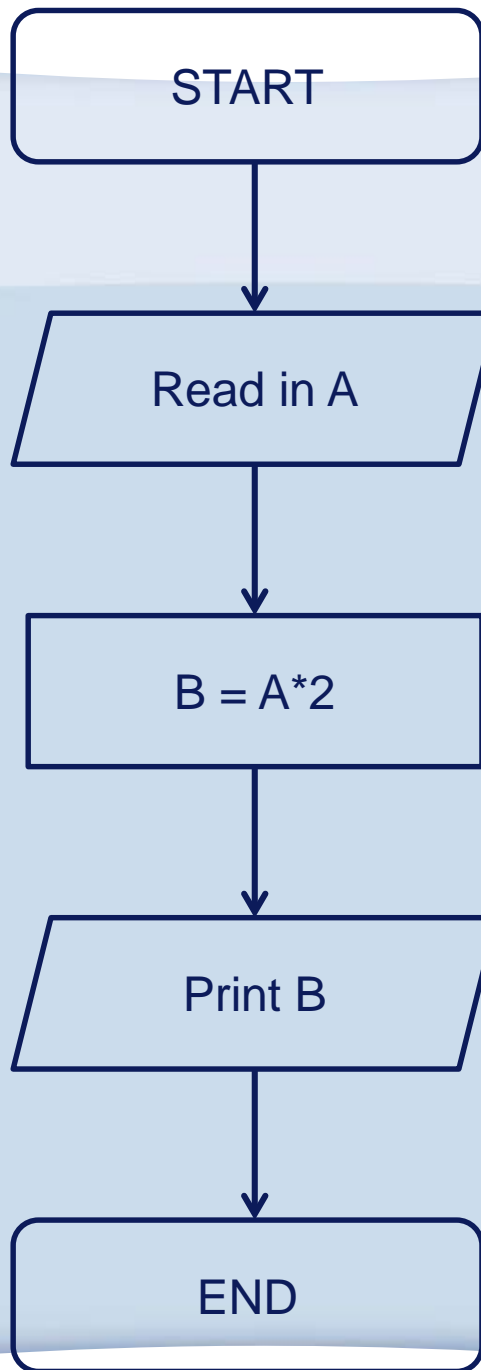
Input/Output
Operation



Decision



Process



What is pseudocode?



- ❖ **Pseudocode** is a readable description of what an algorithm should do, which can be implemented in any language

Structured English and Pseudocode



Structured English

```
PROGRAM PrintNumber:  
    Read in a number and  
    print it out.  
END.
```

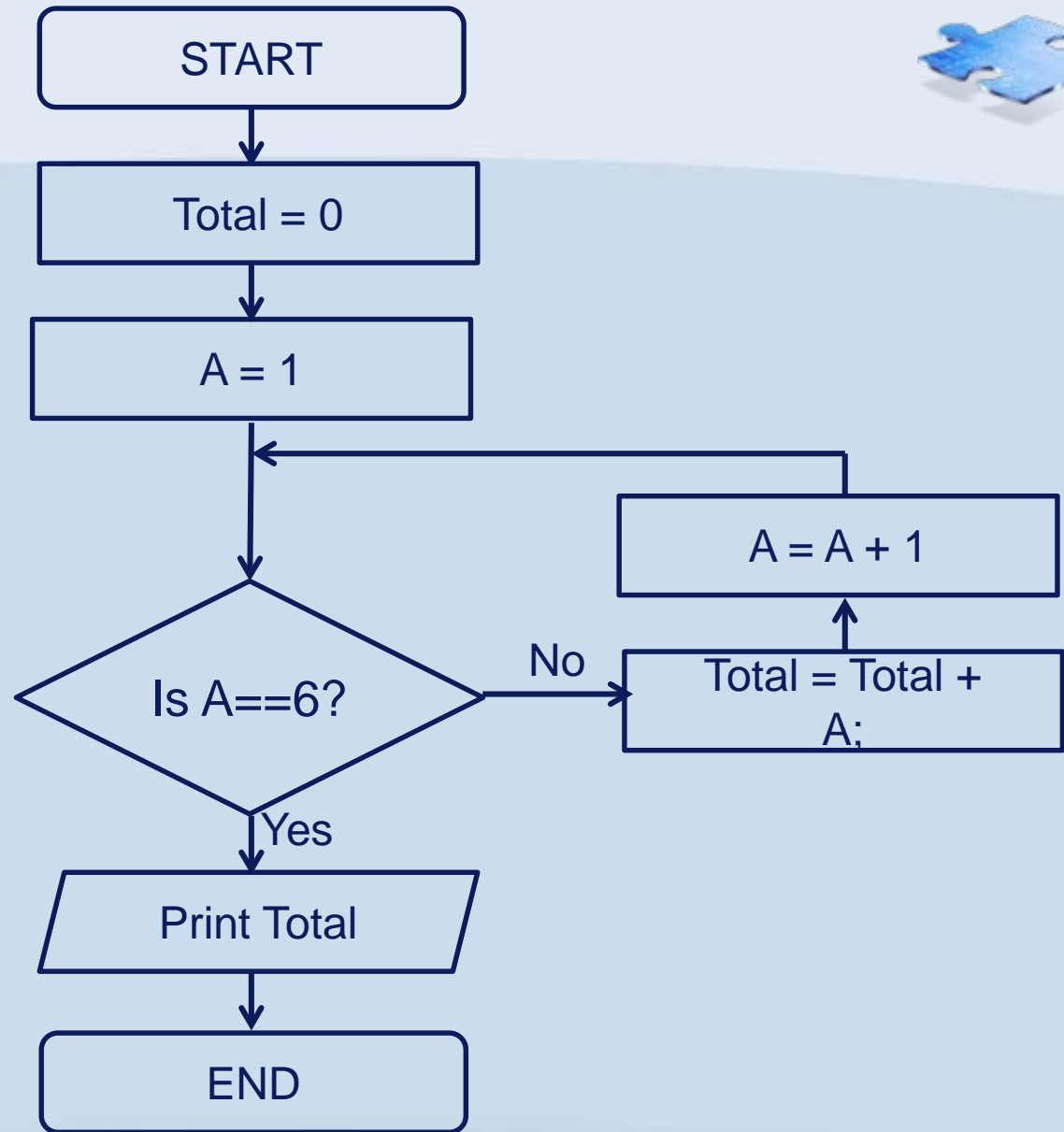
Pseudocode

```
PROGRAM PrintNumber:  
    Read A  
    Print A  
END.
```

An exercise



- ❖ Write the following algorithm in both pseudo code and a flowchart:
 - Print the sum of the following numbers -1...5



Structured English and Pseudocode

Structured English

```
PROGRAM PrintSum1to5:  
    Keep adding the  
    numbers from 1 to 5.  
END.
```

Pseudocode

```
PROGRAM PrintSum1to5:  
    Total = 0  
    A = 1  
    WHILE (A NOT EQUAL TO  
        6) DO  
        Total = Total + A  
        A = A + 1  
    ENDWHILE  
    Print Total  
END.
```

More exercises



- ❖ Alter the previous algorithm so that it calculates the sum of the numbers 1 to 100 but include only multiples of three or five in the sum e.g., 3, 5, 6, 9, 10.
- ❖ Given a list of positive numbers return the largest number in the list.

A group exercise



- ❖ In groups of 4, take a case study, draw a flowchart and matching pseudocode of a **scenario** in your case study.
- ❖ Create a .docx or a .pdf to include a picture of the flowchart and pseudocode text.
- ❖ Upload to Week2 Assignment (one per group)
- ❖ Write group name in header
- ❖ Submit at end of class.

Thank You !

