

# Pseudocode and Flowcharts

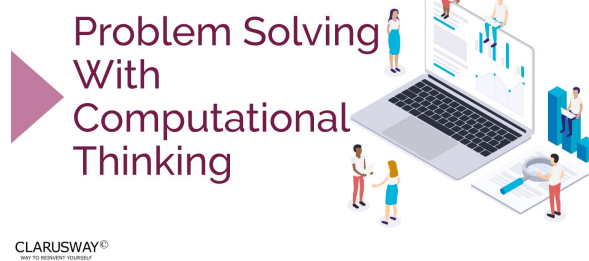
03212020-Computational Thinking  
Training Clarusway  
Pear Deck - March 21, 2020 at 10:36AM

## Part 1 - Summary

Use this space to summarize your thoughts on the lesson

## Part 2 - Responses

Slide 1





Use this space to take notes:

## Slide 2

### Table of Contents



-  Pseudocode
-  Flowchart

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Use this space to take notes:

## Slide 3



### 1 Pseudocode

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Use this space to take notes:

## Slide 4

## ► Pseudocode



Let's discuss and try to predict what does pseudocode mean!



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## Slide 5

## ► Pseudocode



- Pseudocodes are one of two popular ways to represent an algorithm.
- Pseudocode is an informal way of representing a computer program or an algorithm.
- It looks like a programming language though, it should be written in a programming language for it to be executed. It's language-agnostic.
- Writing pseudocode is basically writing what you want your program to do in English.
- Aims to mimic the general style of a programming language

```
OUTPUT "What is your name?"  
INPUT user inputs their name  
STORE the user's input in the name variable  
OUTPUT "Hello" + name  
OUTPUT "How old are you?"  
INPUT user inputs their age  
STORE the user's input in the age variable  
IF age >= 70 THEN  
    OUTPUT "You are aged to perfection!"  
ELSE  
    OUTPUT "You are a spring chicken!"
```

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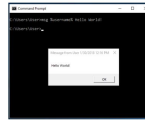


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## Slide 6

## ► Pseudocode

```
OUTPUT 'What is your name?'
INPUT user inputs their name
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## Slide 7

## ► Pseudocode

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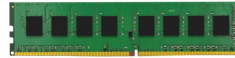


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## Slide 8

## ► Pseudocode

```
OUTPUT 'What is your name?'
INPUT user inputs their name
STORE the user's input in the name variable
OUTPUT 'Hello' + name
OUTPUT 'How old are you?'
INPUT user inputs their age
STORE the user's input in the age variable
IF age >= 70 THEN
    OUTPUT 'You are aged to perfection!'
ELSE
    OUTPUT 'You are a spring chicken!'
```



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## Slide 9

## ► Keyword

There are these keywords that are widely used, you can use your own keywords, but these are the most frequently used amongst other computer programmers and should not be used as variable names.

```
START, BEGIN: This is the start of your pseudocode.
INPUT: This is data retrieved from the user through the input device.
READ, GET: This is used when reading data from a data file.
PRINT, DISPLAY, SHOW, OUTPUT: This will show your output to a screen.
COMPUTE, CALCULATE: To calculate the result of the expression.
SET, INIT: To initialize values
INCREMENT, BUMP: To increase the value of a variable
DECREMENT: To reduce the value of a variable
END: This is the end of your pseudocode
```

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## Slide 10

## Your Response


**Answer 1:**  
take tea pot put water in bottom part open  
oven put tea pot on oven when water  
boiled put a tea on up part of teapot and

## ► Let's brew some tea

Let's brew a tea. Think that we have all the ingredients, tools etc.  
You don't have to use Keywords on this exercise. Just Plain English.

add boiled water on up part add more water  
bottom part of teapot wait 20 mins for  
brewing and put tea from up part of tea pot  
into the teacup until half full add water the  
rest of teacup and drink

**Answer 2:**  
shortcut put water keettle when it boiled put  
water in to the glass put fat tea



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Slide 11

## ► Let's brew a tea

Finalize:


- get the ingredients
- heat the water
- put some tea inside the water
- while the color of the tea is not dark enough
- wait

Get the ingredients:

- get tea
- get water
- get sugar
- get milk

Heat the water:

- get pot
- put the water inside the teapot
- put the teapot on the stove
- turn on the stove
- while water is not boiling
- wait for water to boil



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Slide 12	Your Response
	<p><b>Answer 1:</b> start input how many hours did she work input what is working rate for per hour calculate hours*rate output Marr's wage end</p>

▶ **Keyword**

Let's write a pseudocode for calculating Mary's wage.

**Inputs :** hours and rate

**Output:** pay

 **CLARUSWAY**  
SIMPLY EASY, write your response!

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Slide 13

▶ **Keyword**


Let's write a pseudocode for calculating Mary's wage.

Inputs : hours and rate

Output: pay

**Begin**  
**INPUT** hours  
**INPUT** rate  
**pay** = hours \* rate  
**OUTPUT** pay  
**End**

**CLARUSWAY**®  
SIMPLY EASY, write your response!



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Slide 14

## ► Pseudocode



### LEARNING AND STUDYING A NEW SUBJECT

```
While you don't feel ready to practice
  read about the subject
  if you encounter a word you don't know
    look it up on the internet
```

```
While you are not able to solve most of the problems about the subject
  keep practicing on the problems
  if you find a topic you don't know about
    while you don't feel comfortable about that topic
      keep practicing
```

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Use this space to take notes:

## Slide 15

## ► IF - ELSE IF - ELSE



This keyword is used if a certain condition has to be met for the upcoming block to be executed. For example:

```
IF you are happy      If you are tired
  Then smile          Then rest
                     else if you are stressed
                     Then relax
ENDIF                 else
                     Keep working
```

As you can see we also use indentation in order to declare that "smile" is being executed **inside** the if statement above it.

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## Slide 16



## ► IF - ELSE IF - ELSE



This keyword is used if a certain condition has to be met for the upcoming block to be executed. For example:

```
IF you are happy
Then smile
ENDIF
else if you are tired
Then rest
else if you are stressed
Then relax
else
Keep working
```

As you can see we also use indentation in order to declare that "smile" is being executed **inside** the if statement above it.

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Use this space to take notes:

## Slide 17

## ► IF - ELSE IF - ELSE



This keyword is used if a certain condition has to be met for the upcoming block to be executed. For example:

```
IF you are happy
Then smile
else if you are angry
Calm down
else
try to be happy
ENDIF
```

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Use this space to take notes:

## Slide 18

## ► IF - ELSE IF - ELSE



```
Begin
INPUT hours, rate
IF hours < 40
THEN
    pay = hours * rate
ELSE
    pay = 40 * rate + (hours - 40) * rate * 1.5
OUTPUT pay
End
```

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Use this space to take notes:

## Slide 19

## ► FOR structure



For loop runs for each element inside a group. For example:

```
For every day of the week
    Count;
endfor
```

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## Slide 20

## ► FOR structure



For loop runs for each element inside a group.  
For example:

For every 25 minutes of study

Earn one Pomodoro;

endfor



**Pomodoro = Pomodoro +1**

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## Slide 21

## ► WHILE Structure



While is similar to the for loop, differently it runs the loop until the condition provided is **unsatisfied**. Example:

Apples = 5

Oranges = 10

While apples < oranges

increase apples;

endwhile

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## Slide 22

## ► Let's wash the dishes



Let's wash the dishes. Think that we have all the tools etc.



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### Slide 23

## ► Let's wash the dishes



gather the dirty dishes  
if you have a dishwasher around you  
    put the dirty dishes inside the dishwasher  
    set the settings of the dishwasher  
    while the time set is not over  
    wait  
else  
    while dishes are not clean  
    take one of the dishes  
    wash it with your hand  
    dry it and put it aside



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### Slide 24

### Your Response

► Exercise

Write a pseudocode that takes a number as an input and prints true if it is greater than 10 and false otherwise.

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Slide 25

► Exercise

```
read num
if num > 10
  print true
else
  print false
```

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STEP TO ACQUIRE YOURSELF

25

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Slide 26



## 2 Flowcharts

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### Slide 27

## ► Flowcharts



Let's discuss and try to predict what does flowchart mean!



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### Slide 28

## Flowcharts

- A flowchart is a diagram that represents a sequence of instructions.
- Flowcharts have standard symbols to represent different instructions.

Name	Symbol	Usage
Start or Stop		The beginning and end points in the sequence.
Process		An instruction or a command.
Decision		A decision, either yes or no.
Input or Output		An input is data received by a computer. An output is a signal or data sent from a computer.
Connector		A jump from one point in the sequence to another.
Direction of flow		Connects the symbols. The arrow shows the direction of flow of instructions.

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28

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### Slide 29

### Your Response

Draw a flowchart to login to your facebook account



Students, draw anywhere on this slide!

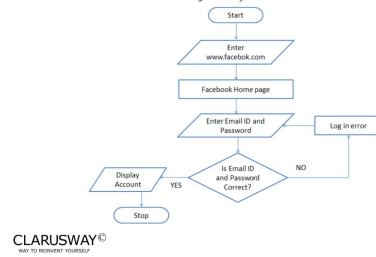
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### Slide 30

## Exercise

Draw a flowchart to login to your facebook account:



Use this space to take notes:

### Slide 31

*Bank of America has launched a promotion for its credit card customers. According to the promotion, the customers will receive a gift voucher worth \$500 with their monthly bill if they spend \$15,000 more than their last month spending and their last month bill is not less than \$10,000.*



Students, draw anywhere on this slide!

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### Your Response

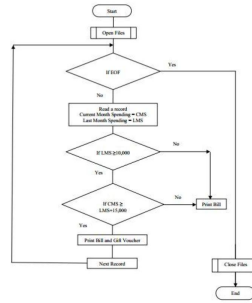
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### Slide 32



## Exercise

Draw the flowchart of the promotion



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32

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# THANKS!

### Any questions?

You can find me at:

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- ▶ eric@clarusway.com

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33

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