Code Logic 101

A beninging

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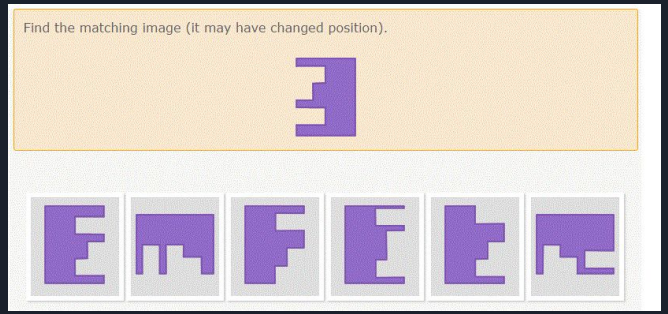
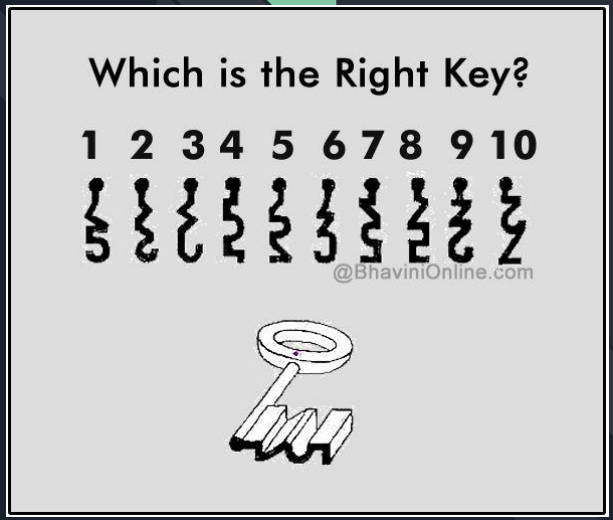
How to build logic

3 2	1	15 5	6	4	22 7	4 3	16 9	15 8
25 3	6	17 8	9	5	2	1	7	4
7	9	9 4	3	8	8 1	20 6	5	2
6 5	14 8	6	2	17 7	4	9	17 3	1
1	13 4	2	20 5	9	3	8	6	12 7
27 9	7	6 3	8	1	20 6	6 4	2	5
8	2	1	7	10 3	9	5	14 4	6
6	8 5	16 9	4	2	15 8	7	1	3
4	3	7	1	13 6	5	2	17 8	9





(P1) How to build logic - Critical Thinking

To think clearly & rationally analyse a subject to come to one or many conclusions

Form judgement gather steps on what to do or what to believe.

You will gain the ability of self-monitored, reflective and independent thinking.

It not about facts and information. It’s not about judge/jury and executioner or criticising others

It will not make you less creative, it will actually enhance it.

(P1) How to build logic - Critical Thinking

- Puzzles
- Riddles
- Math Questions
- Sudoku
- Chess/Checkers
- Minesweeper/Treasure hunter/Sokoban
- Building/Drawing games
- Video games

1. You have 3 labeled identical containers ‘Apples’, ‘Oranges’, ‘Mix of O and A’s’. What you know is…
    - These containers have what is labelled
    - But the containers are labelled wrong (if you look at orange container, it is either apple or mix)

   You can only pick from one container to fix the label issue.

2. You are standing before two closed doors. One of the doors leads to heaven and the other one leads to hell.

   Two watchmen are standing, one in front of each door. You know one of them always tells the truth and the other always lies, but you don’t know which watchman tells the truth and who is the liar.

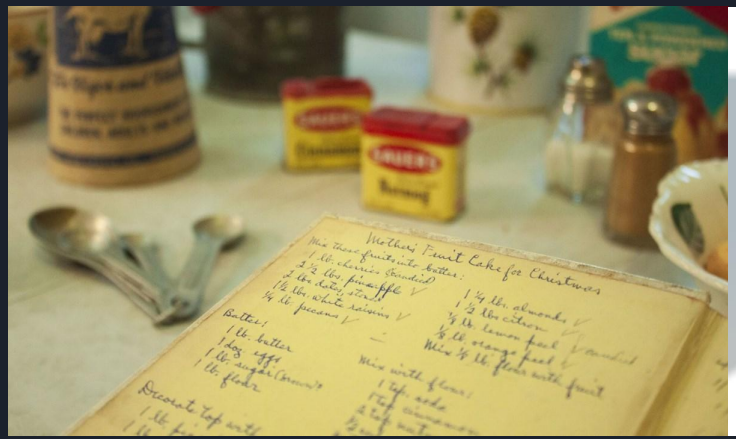
   You can ask only one question to one of them, in order to find the way to heaven. What will you ask?

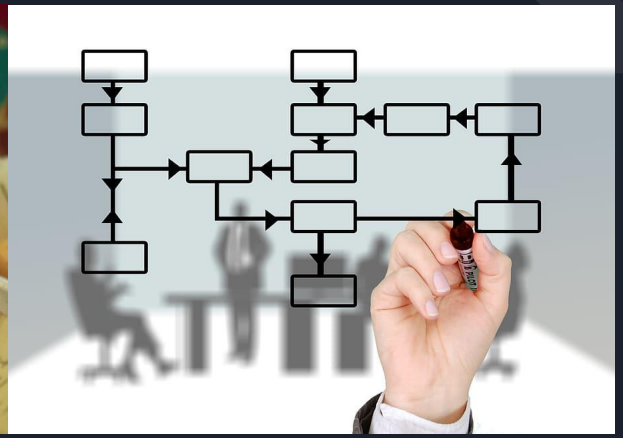
(P1) How to build logic - Critical Thinking

Sudoku is a number puzzle

- Every 3x3 square needs to have one of each of the numbers 1-9
- Every row needs to have one of each of the numbers 1-9
- Every column needs to have one of each of the numbers 1-9

Solution/Logic Design





(P1) Solution/Logic Design - Pseudo Code

Pseudo Code is the equivalent a recipe. It's the building blocks to develop algorithms.

You set out your ingredients then coordinate your instructions for everyone to understand.

The layout most people who write Pseudo Code is similar to how coding is syntax but with just English (or another language) words instead of computer words

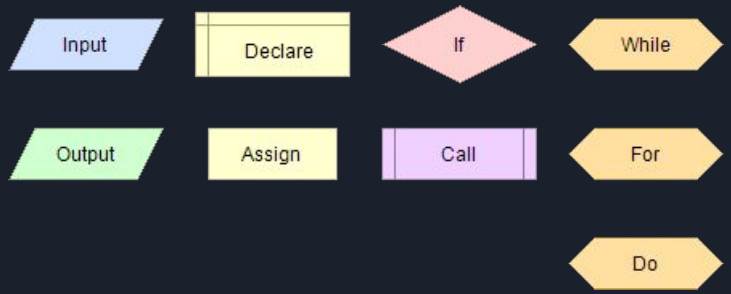
Vocab similarities

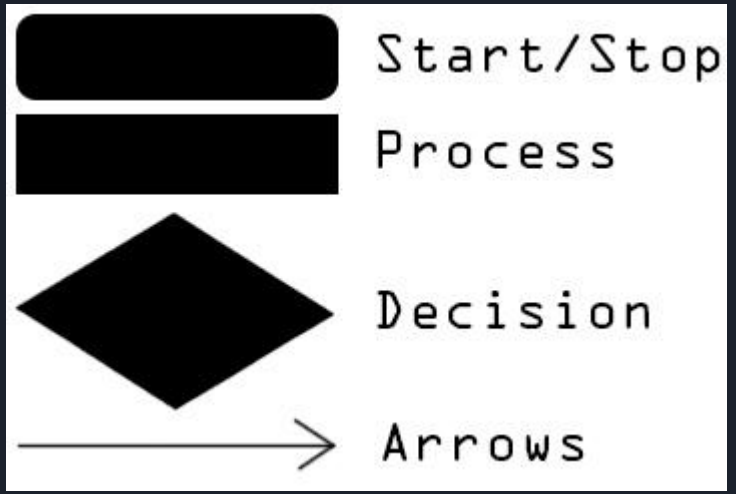
- Looping/Selection
  - Do While_EndDo;
  - DoUntil_EndDo;
  - If_Else_EndIf;
  - Case_EndCase;
  - Call/Call__with___;
  - Return/Return_;
  - When_.
- Verbs
  - Generate; Compute; Process
  - Set; Reset;
  - Increment; Calculate; Add; Sum; Multiply
  - Print; Display; Input; Output; Edit; Test
- Don't declare the data types as you hardly declare variables to begin with

(P1) Solution/Logic Design - Flowcharts

Flowcharts are visual Psuedo Code. Visual steps of getting from Point A - Point ??.

Given the context of programming, some loops and iterations may give you a headache trying to track origin of the decision making process. But this form of creating algorithms helps you visualize the whole process of the creation





Part 2

Coding 101

https://scratch.mit.edu/create

Let’s check out Scratch

Terminology

Variables - containers that hold data

Operator - a symbol function that indicates an action (+ - * /)

Logical Operator - a function that connects two or more expressions to create a conditional event (AND; OR; NOT)

Switch/Case statement - a form of if statement that utilises multiple nested statements

Loops - create repetition in statements (WHILE; FOR; DO)

Functions - code written to accomplish a specific task.

Links

a. Instructional Materials:
   - Udemy
   - Sudoku
   - Flowchart Maker
   - Alice
   - Scratch

a. Resources:
   - Code Logic
     - Logic Set 1
     - Logic Set 2
     - Logic Set 3