

# Tutorial-1

## Crypt Arithmetic problems:

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$$\begin{array}{r} \text{TWO} \\ + \text{TWO} \\ \hline \text{FOUR} \end{array}$$

F: 1

We do it using hit and trial (intelligent guesses)

O: 5

$$\begin{array}{r} \text{1 1} \\ 7 \ 6 \ 5 \\ + 7 \ 6 \ 5 \\ \hline 1 \ 5 \ 3 \ 0 \end{array}$$

It has multiple answers.

$$\begin{array}{r} 8 \ 4 \ 6 \\ + 8 \ 4 \ 6 \\ \hline 1 \ 6 \ 9 \ 2 \end{array}$$

#

$$\begin{array}{r} \text{EAT} \\ \text{THAT} \\ \hline \text{APPLE} \end{array}$$

A: 1

T has to be 9

$\Rightarrow P = 0$

$$\begin{array}{r} \text{①} \quad \text{②} \\ 8 \ 1 \ 9 \\ 9 \ 2 \ 1 \ 9 \\ \hline 1 \ 0 \ 0 \ 3 \ 8 \end{array}$$

$\Rightarrow E: 8$

$\Rightarrow H: 2$

#

$$\begin{array}{r} \text{SEND} \\ \text{MORE} \\ \hline \text{MONEY} \end{array}$$

M: 1

O: 0

Rule #1: When all digits are between 0-9, then max carry generated can be 1-19

$$\begin{array}{r} \text{① 7} \\ 9819 \ 9819 \ x+1 \ 3 \\ 1 \ 0 \ 4 \ 2 \\ \hline 1 \ 0 \ x+1 \ 2 \ 5 \end{array}$$

$$\begin{array}{r} 9 \ 6 \ 7 \ 3 \\ 1 \ 0 \ 8 \ 6 \\ \hline 1 \ 0 \ 7 \ 8 \end{array} \quad \times$$

$$\begin{array}{r} 9 \ 5 \ 6 \ 7 \\ 1 \ 0 \ 8 \ 5 \\ \hline 1 \ 0 \ 6 \ 5 \end{array} \quad \checkmark$$

# There are two jugs J1: 4L, J2: 3L capacity.  
Measure 2L



Method 1:  $(0, 3) \rightarrow (3, 0) \rightarrow (3, 3) \rightarrow (4, 2)$

Method 2:  $(4, 0) \rightarrow (1, 3) \rightarrow (0, 1) \rightarrow (4, 1) \rightarrow (2, 3)$

# Amit, Ravi and their grandparents have to cross the bridge over the river within 1 hr to catch a train and they have only one umbrella which can be shared by 2 people. Assume that no one wants to get wet. Cross them in 1 hour and  $< 1$  hour.

Amit  $\rightarrow 5$  min

Ravi  $\rightarrow 10$  min

GM  $\rightarrow 20$  min

GF  $\rightarrow 25$  min

$$10 + 5 + 25 + 10 + 10 = 60 \text{ min}$$

$= 1 \text{ hr}$

- ① Amit & Ravi cross, Amit comes back  
 $10 + 5$
- ② GM & GF cross, Ravi comes back  
 $25 + 10$
- ③ Amit & Ravi cross  $10$  ✓

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# There are 7 stones and 6 Rabbits. Rabbits are waiting to cross. Rabbit can jump over one rabbit and move forward 2 steps.  
How to avoid deadlock?

$R_1 R_2 R_3 \text{ --- } R'_1 R'_2 R'_3$

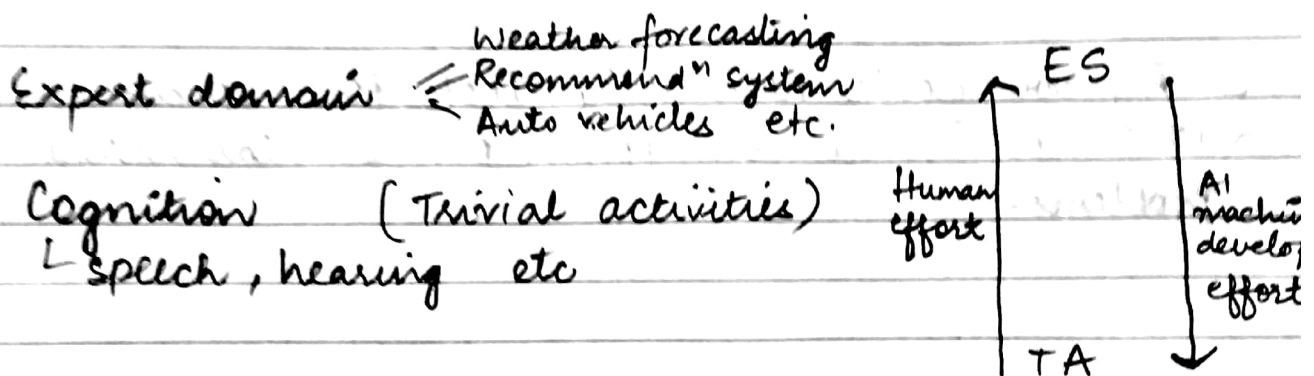
# How will you predict the next winning move in a TicTacToe?

6	1	8
7	5	3
2	9	4

: Magic Square  
Sum of \* = 15

## Artificial Intelligence

- It is the science of making machines exhibit intelligence like human beings
- We, as human beings, are able to process incomplete & uncertain information
- We are not number processing machines
- Machines are good at number crunching, but it won't be reqd in AI machine since it is not a human intelligence trait.



- Elon Musk - Tesla  
↳ Soft AI  $\Rightarrow$  AI should never supersede human
- Nvidia - GPU supplier  
↳ does AI computations
- Alan Turing

Turing test: to check whether machine is AI enabled or not

# First Turing test was passed in 2014 by chatbot.

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Turing test:

Interrogator

Human  
Expert

AI m/c

asks questions from both.

If it is not able to distinguish b/w both which answer is coming from whom,  $\Rightarrow$  machine is able emulate human intelligence.

~~#~~ Reason:

AI solutions will never be the best solutions because as humans, we never aspire for best sol<sup>n</sup>, we settle <sup>down</sup> for optimal solution.

- In AI, we don't necessarily look for specific soln, rather which can be applied on similar nature problems.