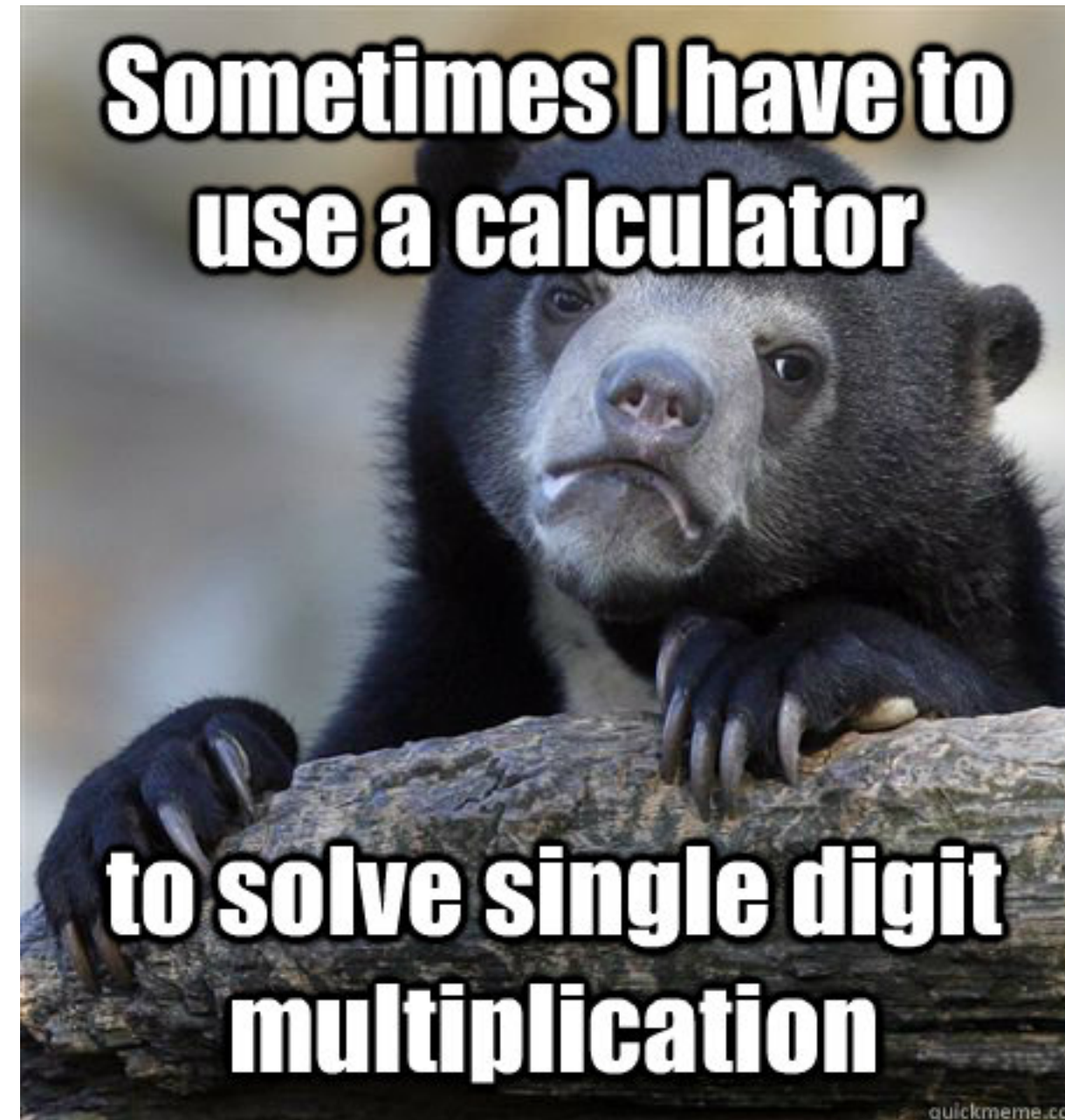# Exercising Basic Algebraic Operations with Snake Game

Preface

With the ever-growing use of calculators, students struggle in doing the basic mathematical calculations on their own such as addition , subtraction, multiplication, division etc.

Many people like to play Games.

So how about learning the basic algebraic calculations while playing the game.

Overview

Project -> snake game where the results of mathematical expressions are the snake food

Mathematical Expressions

Food for snake   Food for brain 😎

Two Expressions
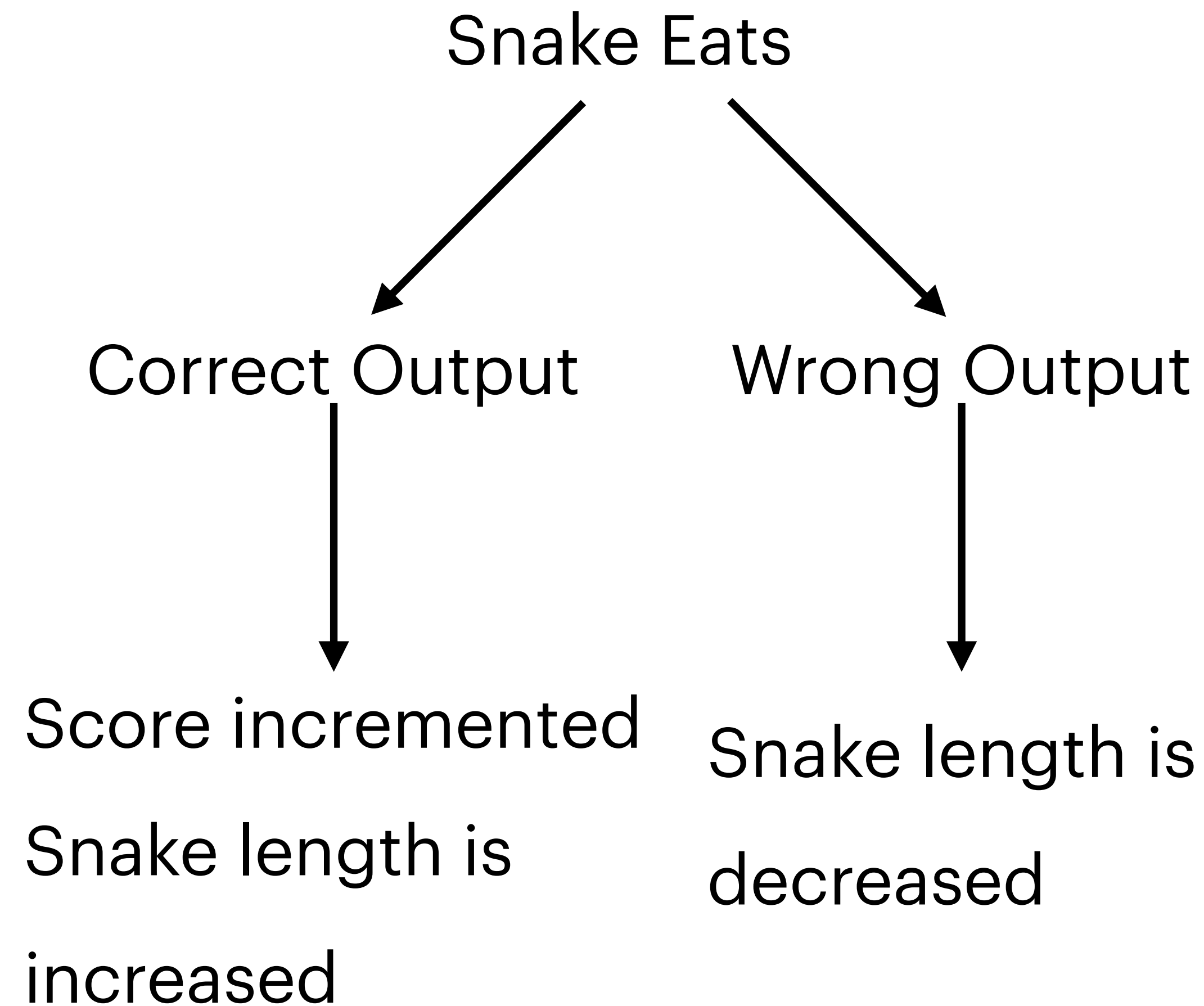## 8 outputs i.e. snake food

2 correct   **6 Incorrect**

Eat any of the correct output and snake length will increase

Snake Eats

Correct Output   Wrong Output

Score incremented

Snake length is increased

Snake length is decreased

After the Snake encounters any of the 8 outputs

New Random expressions and outputs will be generated

Repeatedly eating the wrong outputs

length becomes zero

Game Over

Practice more -> evaluate expressions correctly and eat correct output

Snake head touches its own body

Game Over

Don't eat yourself

Project implementation tools and libraries

Python3

PyGame Library

Algorithm

Initialising pygame

Create game window

Implement the game logic

- Create and display snake

- Create and display food i.e. expressions and results

- Random food generation

- snake length increment, decrement

- Game over conditions

- Score update

Key Points in Implementation

185 + 252 = ?

If options were 430, 437, 480 , 502 then why add them completely just add 1st place digits 5 + 2 = 7 so answer will be 437.

But adding single digits not good for sharpening the mind at all

No worries game won't give such easy options.

So the options given in game will be 427, 437, 447, 452,

Looking at just 1st place digit i.e. 7 will not suffice.

Confused between 427 , 437, 447 which one is correct?

Better add remaining place digits as its good for mind though

Game won't give easy options bette start avoiding shortcuts

8 different outputs are displayed in the game what if they overlap or hide behind one another

No worries that won't happen

How?

The whole game screen is divided into 8 sections and only one output is displayed in each section by randomly selecting the position in the section only

No overlapping

Food evenly distributed throughout the screen

What if the correct output is displayed only in a particular section

That won't happen, in game first for each of the outputs first the sections are randomly shuffled and then assigned after the inside that section a position is selected randomly where the output will be displayed

Thank You