

PLAYER 1



HIGHSCORE 2500



PLAYER 2

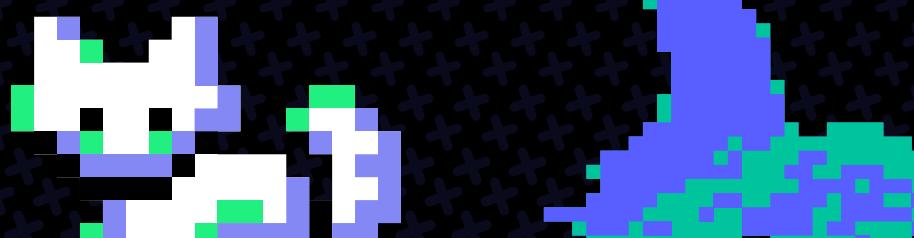
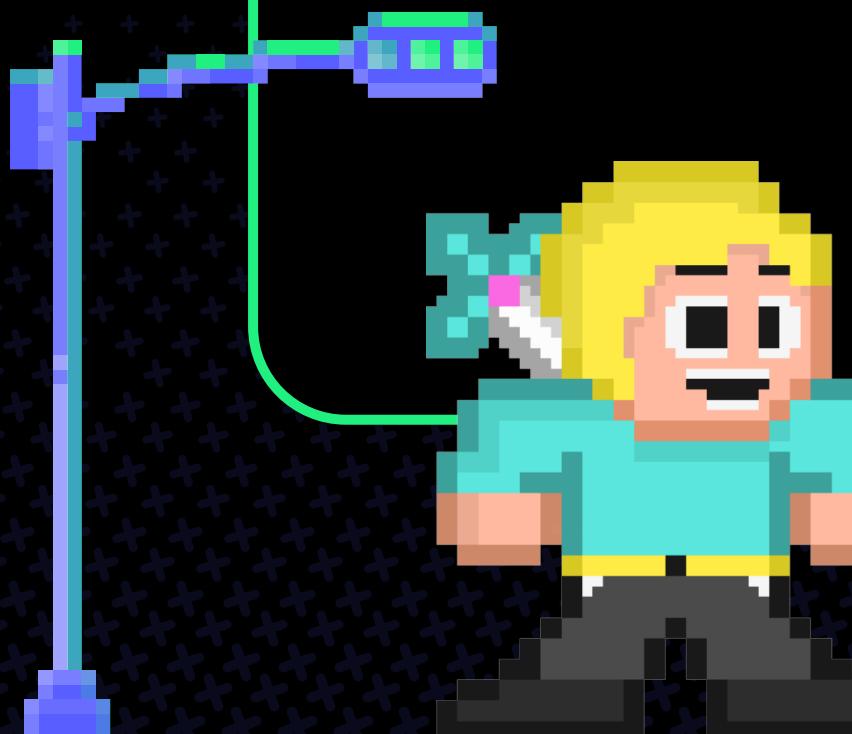
# LET'S CHEM!

START

MENU

SIGN IN

LETS CHEM!



MENU

➡ 01

♦ 07

★ 12



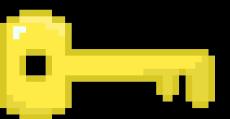
# PROJECT IDEAS



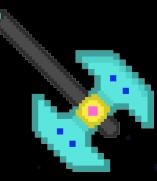
LAILA  
HUMAN BODY



ELIZA  
GRAPH THEORY  
SIMULATOR



SOFIA  
SUPERHERO GAME



TAB  
CHEMISTRY  
PLATFORM

# PROJECT IDEAS

PERSON	NAME	DESCRIPTION
Eliza	Graph Simulator	Create, visualize, and simulate graph-based structures and algorithms (discrete mathematics)
Laila	Physics of the Body	Interactive visualizer of how physics relate to the body
Sofia	Superhero Game	interactive game with forces + projectiles (physics)
Tabasuum (Chosen)	Lets Chem!	Platform game (like Super Mario Bros) with chemistry concepts for each level/minи game
	Why chosen:	Entertaining, Interactive, Complicated (Impressive but not Impossible)



MENU

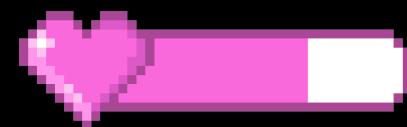
⚡ 01

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★ 12

LAILA ❤️❤️❤️❤️

# PHYSICS OF THE HUMAN BODY



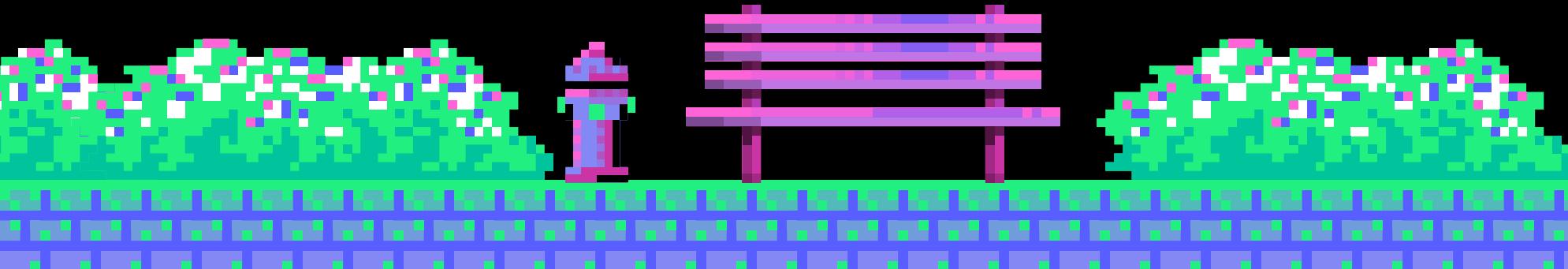
INTERACTIVE VISUALIZER

HOW PHYSICS RELATE TO THE  
BODY

POINT AND CLICK FUNCTION

ZOOM IN

USER WOULD INTERACT WITH  
THE RELEVANT AREA



MENU

→ 01

◆ 07

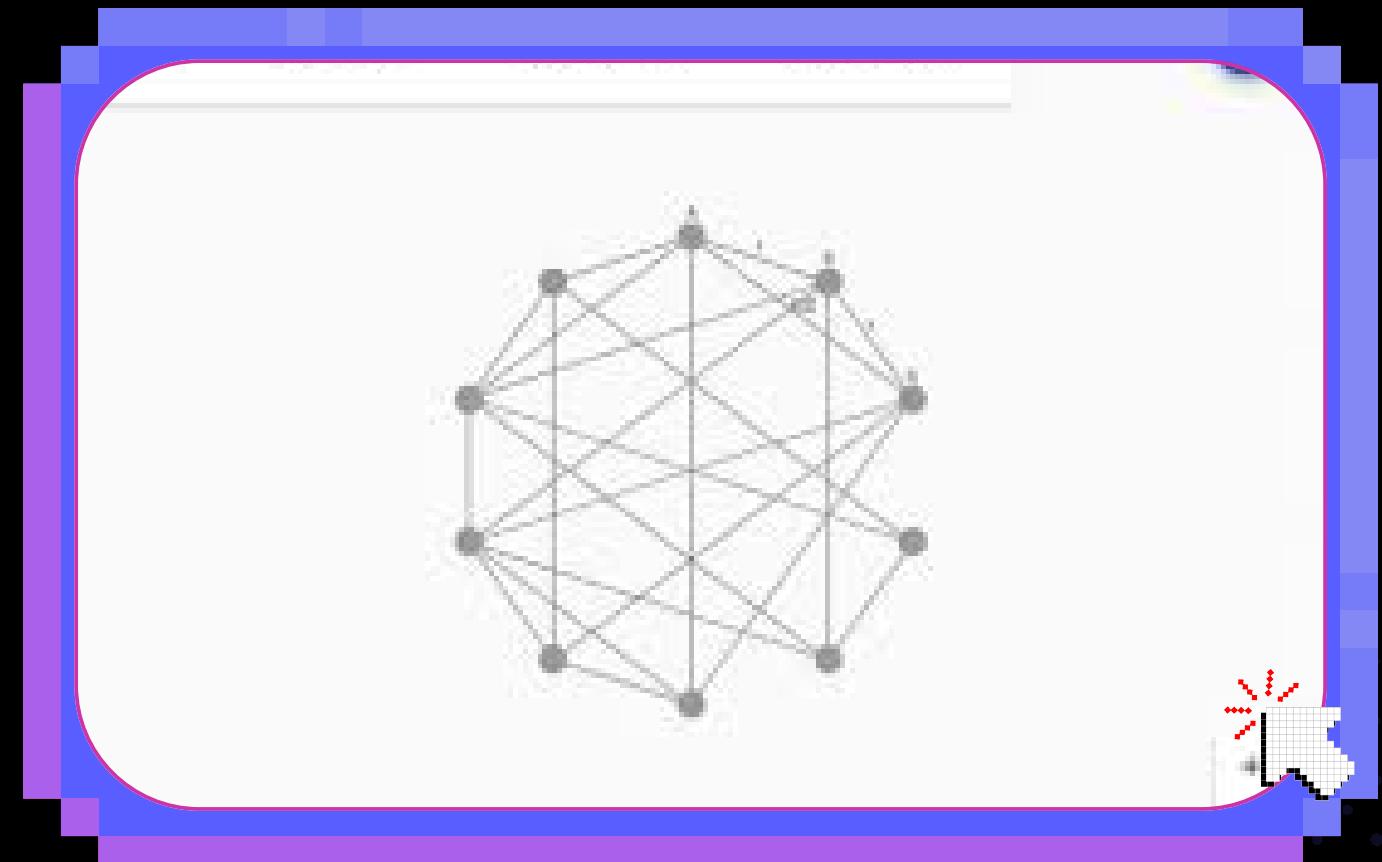
★ 12

ELIZA



# GRAPH SIMULATOR

- ❖ Create, visualize, and simulate graph-based structures and algorithms
- ❖ Hard to learn the theory  
More CS than math/physics/chem



# SUPERHERO GAME

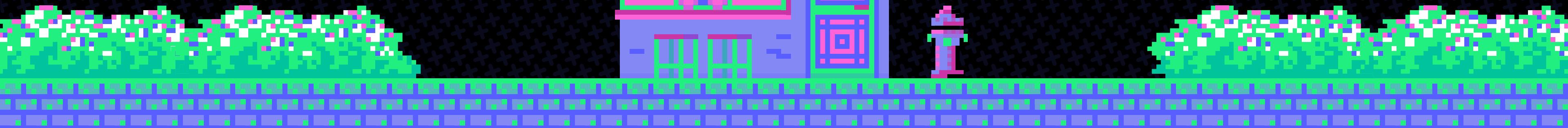
- INTERACTIVE GAME
- FORCES + PROJECTILES
- GOAL: LAST THE MOST TIME IN THE GAME
- HARD TO CODE A GAME THAT COULD GO ON INFINITELY



SOFIA

SIGN IN

# CHEMISTRY CONCEPTS



STOICHIOMETRY

NEUTRALIZATION

GASES

NOMENCLATURE

THE PERIODIC TABLE

THE ATOM

PERIODIC TRENDS

ENERGY

CELLULAR  
RESPIRATION

# CONCEPTS

The main aspects of the concept that the problem addresses is all chemistry related. In particular, they address problems that were encountered during the General Chemistry course at Vanier College (202-NYA-05).

This includes:

PHOTOSYNTHESIS

MOLAR MASS AND  
MOLE  
CONVERSIONS

# PROPOSED SOLUTION

01 07 12



420-201-RE

420-202-RE

420-203-RE

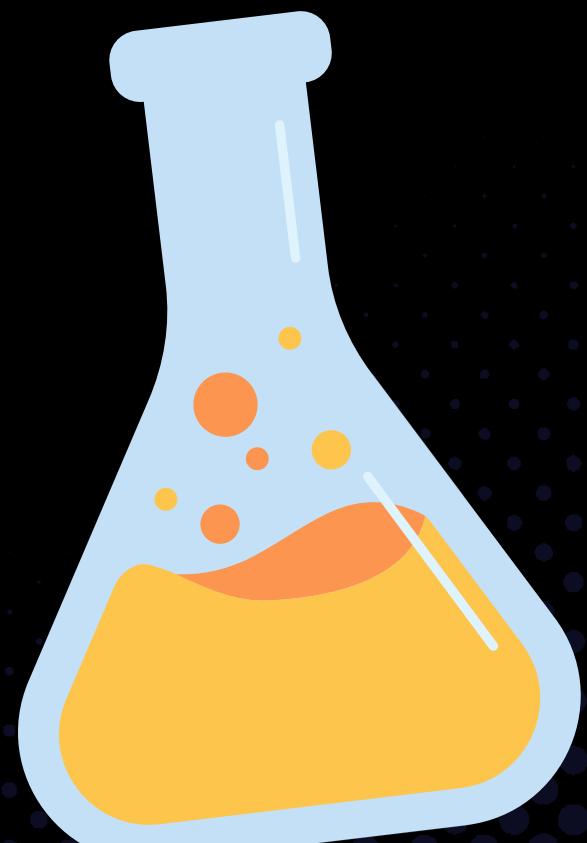
CREATE AN ENGAGING AND INTERACTIVE GAME-LIKE PROGRAM THAT WILL:

TEST KNOWLEDGE ABOUT CHEMISTRY CONCEPTS AND HELP WITH REVISION

AVATAR WILL OVERCOME OBSTACLES

THE OBSTACLES = CHEMISTRY PROBLEMS

PROBLEMS MUST BE SOLVED TO MOVE ON



## EXPECTED OUTPUT



2	13	14	15	16	17	3
4	5	6	7	8	9	10
12	3	4	5	6	7	8
20	21	22	23	24	25	26
38	39	40	41	42	43	44
56	57	58	59	60	61	62
68	69	70	71	72	73	74
	75	76	77	78	79	80
	81	82	83	84	85	86
	87	88	89	90	91	92
	93	94	95	96	97	98
	99	100	101	102	103	104

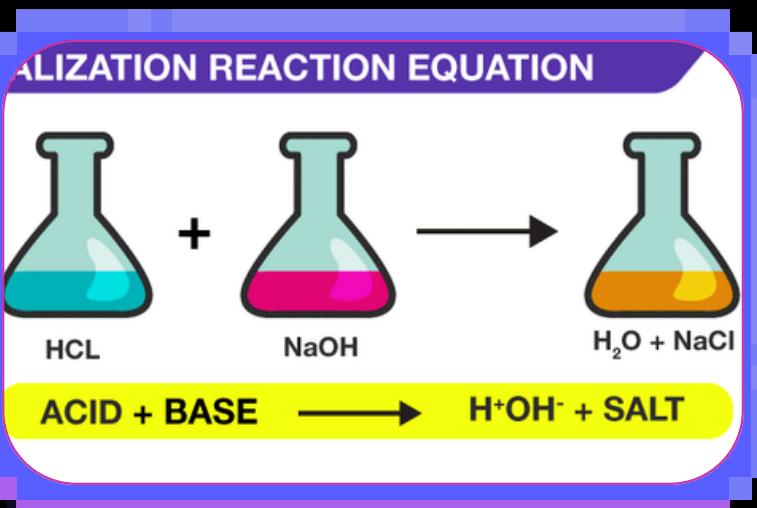
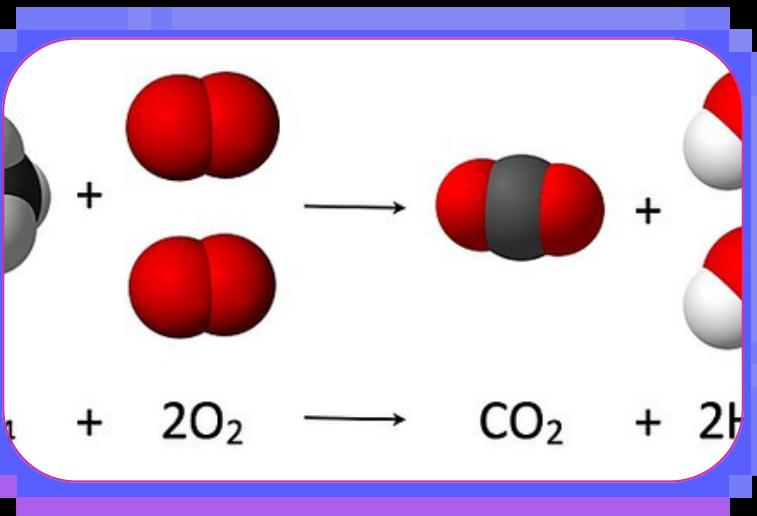


MENU



Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Nonmetals	1 H																	
Metals	2 Li Be																	
	3 Na Mg																	
	4 K Ca																	
	5 Rb Sr																	
	6 Cs Ba																	
	7 Fr Ra																	
	La to Yb																	
	Transition metals (sometimes excluding group 12)																	
	Some elements near the dashed staircase are sometimes called metalloids																	
	1 H 2 He 3 Li 4 Be 5 B 6 C 7 N 8 O 9 F 10 Ne 11 Na 12 Mg 13 Al 14 Si 15 P 16 S 17 Cl 18 Ar 19 K 20 Ca 21 Sc 22 Ti 23 V 24 Cr 25 Mn 26 Fe 27 Co 28 Ni 29 Cu 30 Zn 31 Ga 32 Ge 33 As 34 Se 35 Br 36 Kr 37 Rb 38 Sr 39 Y 40 Zr 41 Nb 42 Mo 43 Ru 44 Os 45 Rh 46 Pd 47 Ag 48 Cd 49 In 50 Sn 51 Pb 52 Sb 53 Bi 54 Po 55 Cs 56 Ba 57 La 58 Ce 59 Pr 60 Nd 61 Sm 62 Eu 63 Gd 64 Tb 65 Dy 66 Ho 67 Er 68 Tm 69 Yb 70 Lu 71 Hf 72 Ta 73 W 74 Re 75 Os 76 Ir 77 Pt 78 Au 79 Hg 80 Tl 81 Pb 82 Bi 83 Po 84 At 85 Rn 87 Fr 88 Ra 103 Lr 104 Rf 105 Db 106 Sg 107 Bh 108 Hs 109 Mt 110 Ds 111 Rg 112 Cn 113 Nh 114 Fl 115 Ml 116 Lv 117 Ts 118 Og																	
	s-block (plus He) f-block d-block p-block (excluding He)																	
	Lanthanides																	
	Actinides																	

LEVEL  
1-2-3



◆ PERIOD/FAMILY -> ELEMENT

Determine the element -> find electrons and protons to pass to next level

◆ STOICHIOMETRIC

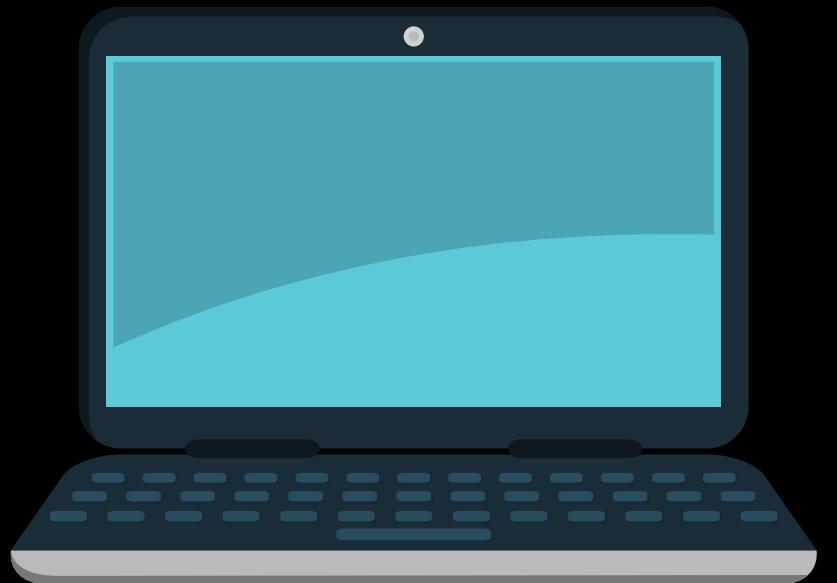
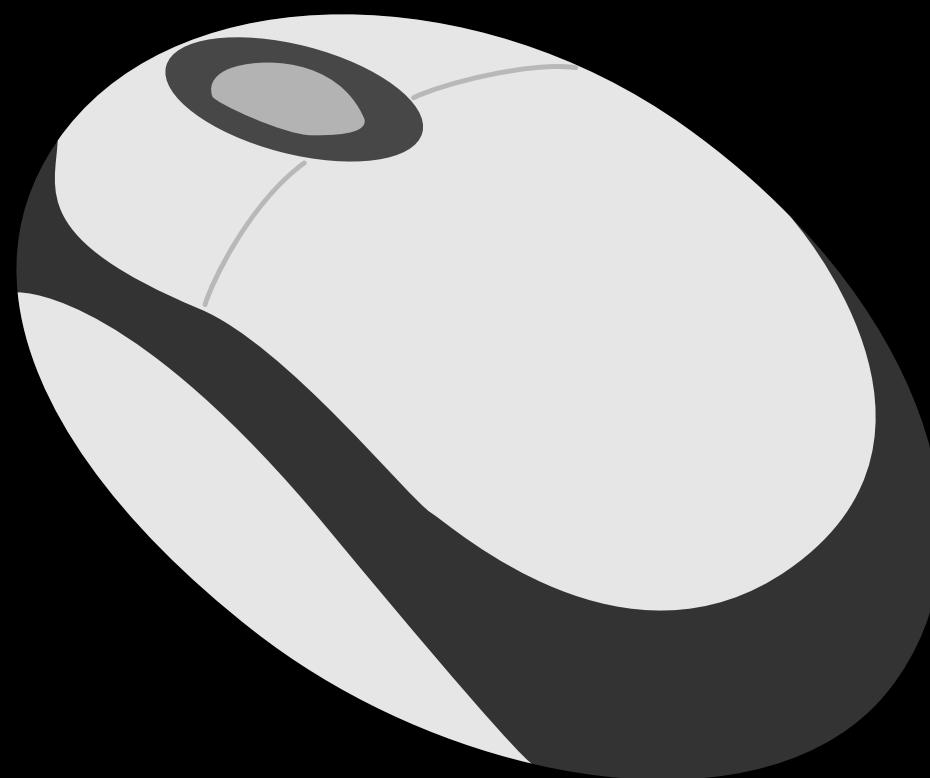
Find the missing molecule. Use the map (one world = one periodic family) to find elements and create the compound

◆ REACTIONS

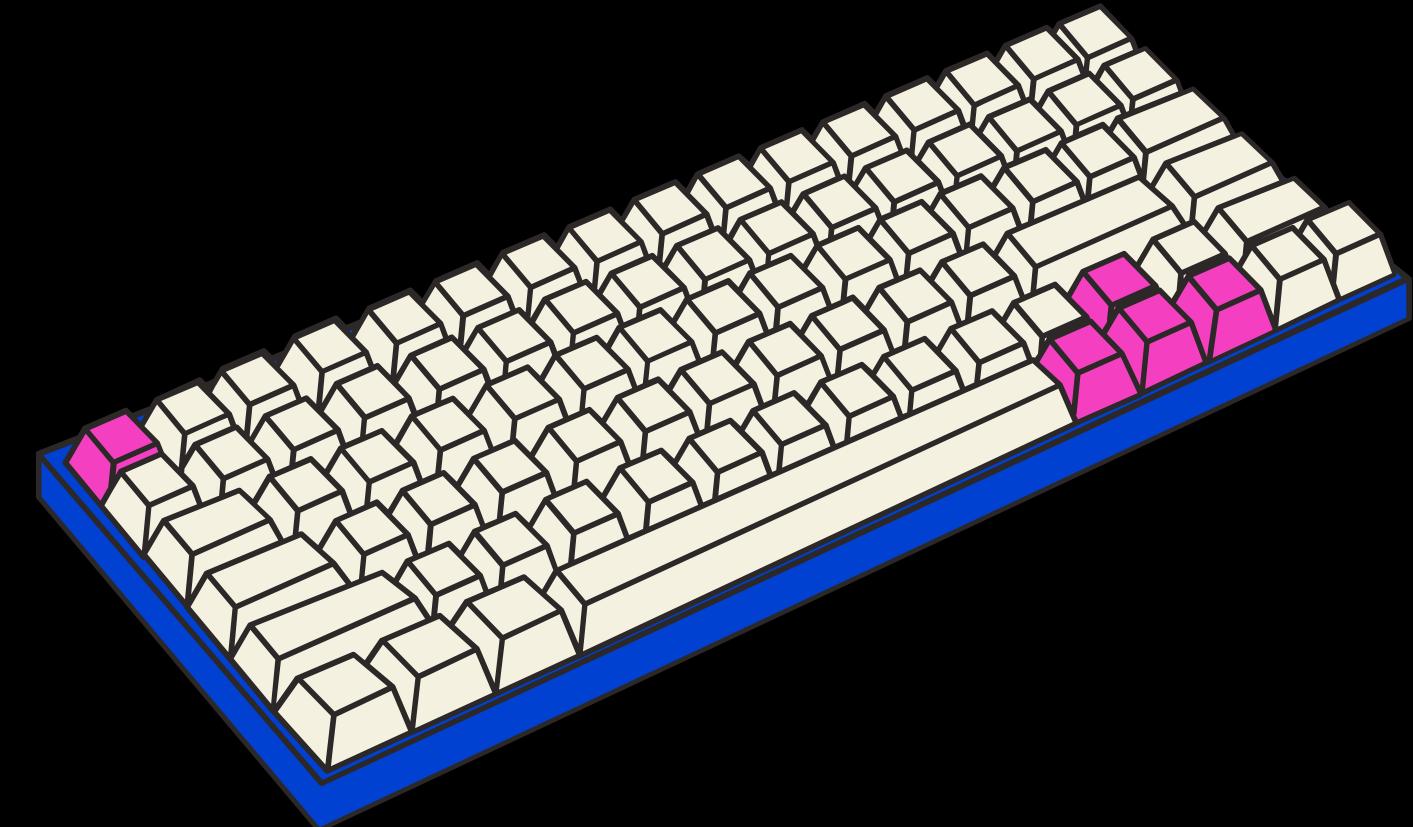
Feed water to plant -> get sugar  
Feed base to acid -> neutralization (get water and salt)

# TYPICAL INPUTS

MOUSE CLICKS



KEYS ON USERS KEYBOARD





# SOLUTION CATEGORY



OUR PROGRAM IS DESIGNED TO BE AN EDUCATIONAL RESOURCE  
DIFFERENT THAN THE STANDARD METHODS TO LEARN

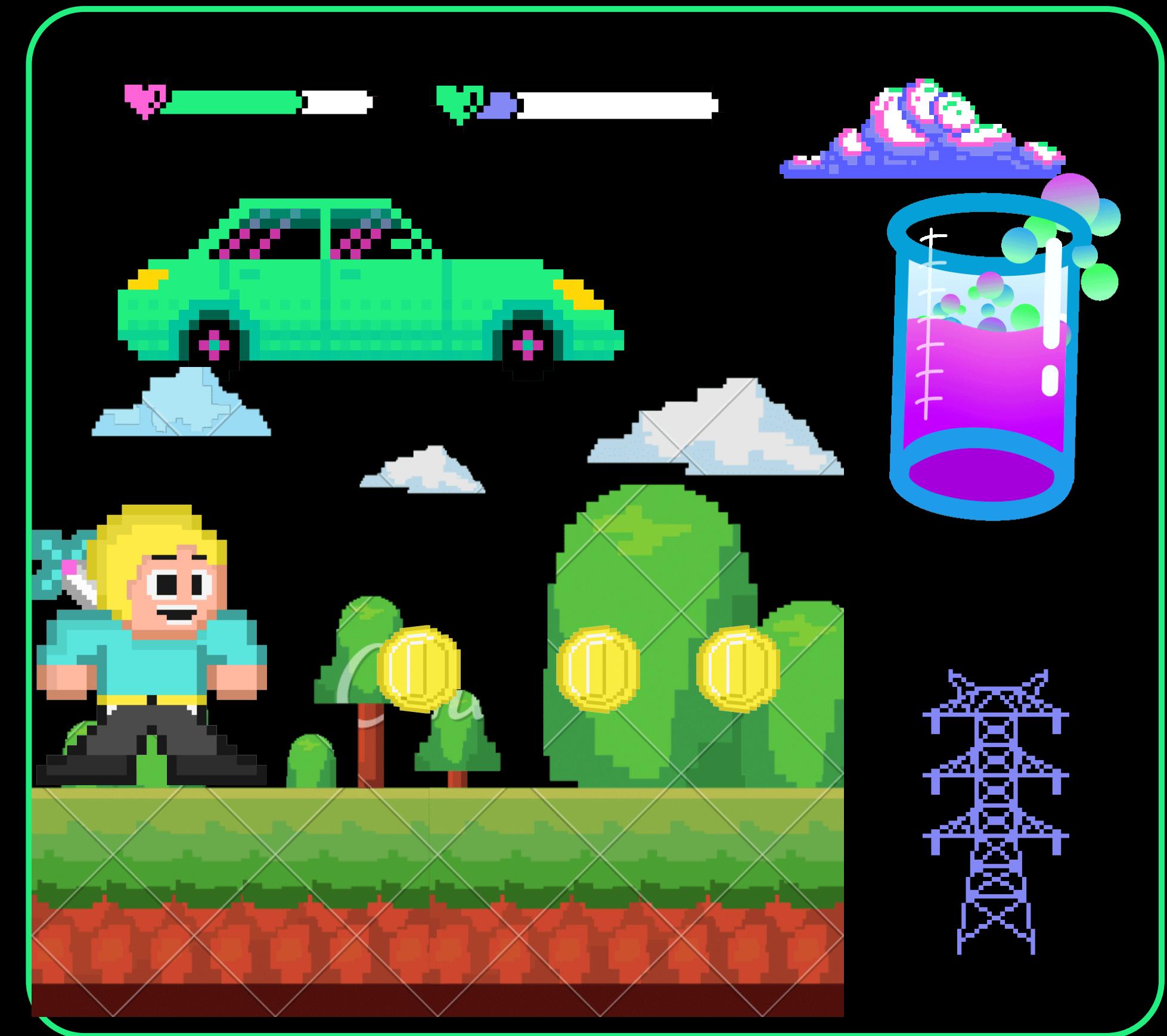
THE GOAL IS TO:

- LEARN
- REVISE
- OUTLINE WEAKNESSES



# VARIABLE PARAMETERS CONTROLLING USER INTERFACE

- ANIMATION DURING REACTIONS
- POWER UPS (SPEED, X-RAY)
- USER MOVING/INTERACTIONS
- VOLUME/PAUSE/RESET
- RELEVANT SFX
- HUD



# FEASABILITY

## JavaFX UI Components

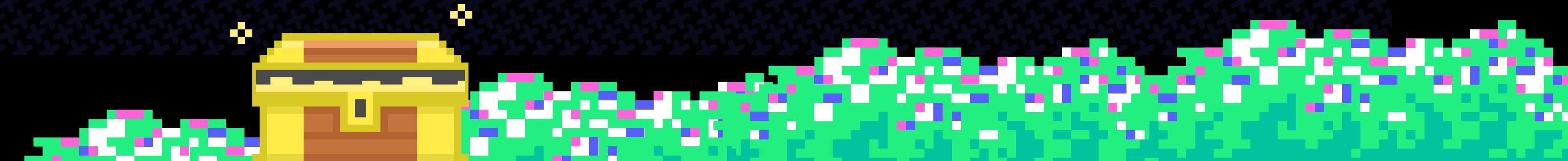
COMPONENT	USE	COMPONENT	USE	COMPONENT	USE	COMPONENT	USE
<b>Canvas</b>	Draw game objects/ background/ animations	<b>ScrollPane</b>	View detailed theory information	<b>Button</b>	Menu interactions and in-game actions	<b>ProgressBar</b>	Show energy levels, reaction progress, or player health
<b>Pane (AnchorPane, BoarderPane, GridPane etc)</b>	Organize UI components	<b>ComboBox</b>	Drop-down Menu	<b>Label</b>	Display scores, instructions etc	<b>TextField</b>	User input
<b>HBox/Vbox</b>	Structure menus, chemistry facts, and inventories	<b>HyperLink</b>	Ressources	<b>CheckBox</b>	Choose different settings (eg Dark Mode)	<b>Shapes</b>	For simple visual components
<b>Scene/Stage</b>	Manage different screens	<b>Timeline/ Transition</b>	Animation	<b>ImageView/ AudioClip</b>	Render sprites, backgrounds, sound effects	<b>Slider</b>	Adjust volume, or other settings



# FEASIBILITY

## Implementation Components

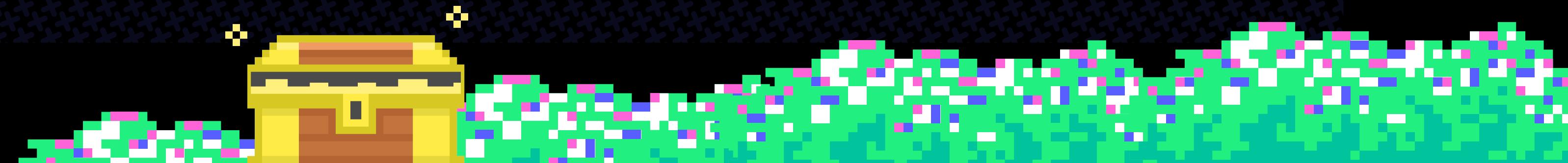
COMPONENT	USE	COMPONENT	USE
<b>Game Loop (Animation Timer)</b>	Continuously update and render game animations	<b>Particle Effects</b>	Visualize chemical reactions (explosions, energy bursts)
<b>Input Handling (KeyEvent, MouseEvent)</b>	Player movement and object interaction	<b>Scene Management</b>	Switch between menu, levels, game-over screens
<b>Entity System</b>	Classes for Player, Enemies, Collectibles	<b>Save/Load System</b>	Track player progress with File I/O
<b>Level System</b>	Classes for organizing properties of each level/world	<b>Score (HUD)</b>	Visualize user's progress and health



# FEASABILITY

## Notable team tasks

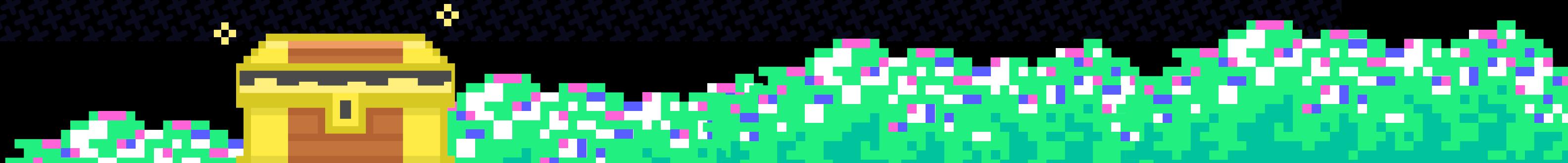
PERSON	TASK
Tab	Movement, User Manual, Timer, UI
Eliza	Animation, Settings, Inputs, Game logic, UI
Sofia	Classes for database, Inventory, Methods for reactions, UI
Laila	Graphics, Dialogue, UI, SFX



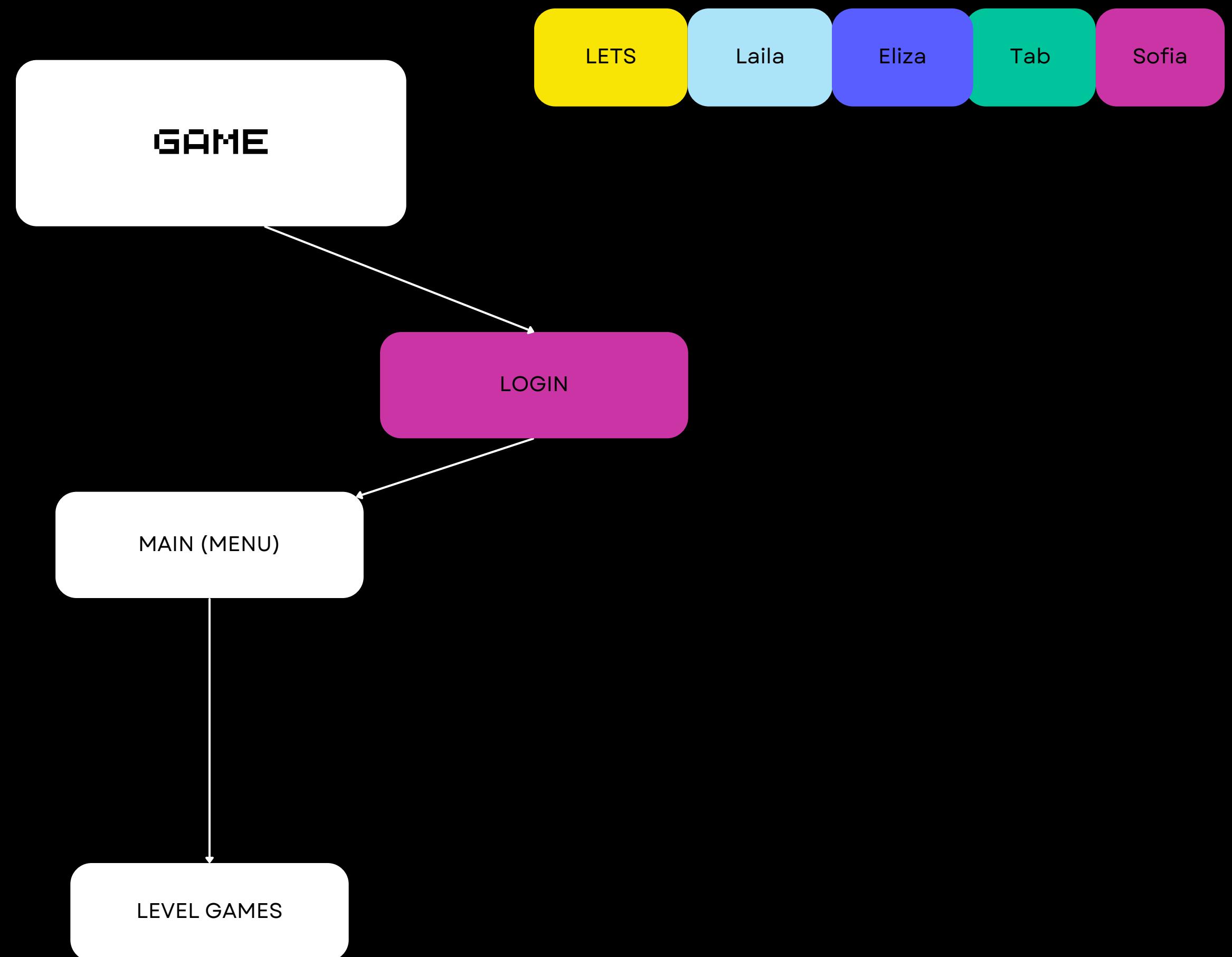
# FEASIBILITY

## Timeline

IDEAL SCHEDULE	FEATURES TO BE COMPLETED
<b>Today (Week 3)</b>	Have project plan in order
<b>Week 3-5</b>	Create all relevant classes, Basic working program, Story Board, Movement, Basic UI, inputs
<b>Weeks 5-9</b>	Main implementation: database classes, art/graphics are finished, world/level classes have working methods, have all dialogue written, all graphics/art completed
<b>Weeks 9-11</b>	Further polishing: working HUD, implementing power ups and how they affect interface
<b>Weeks 11-12</b>	Program fully working, bug testing



# PROJECT STRUCTURE



LETS

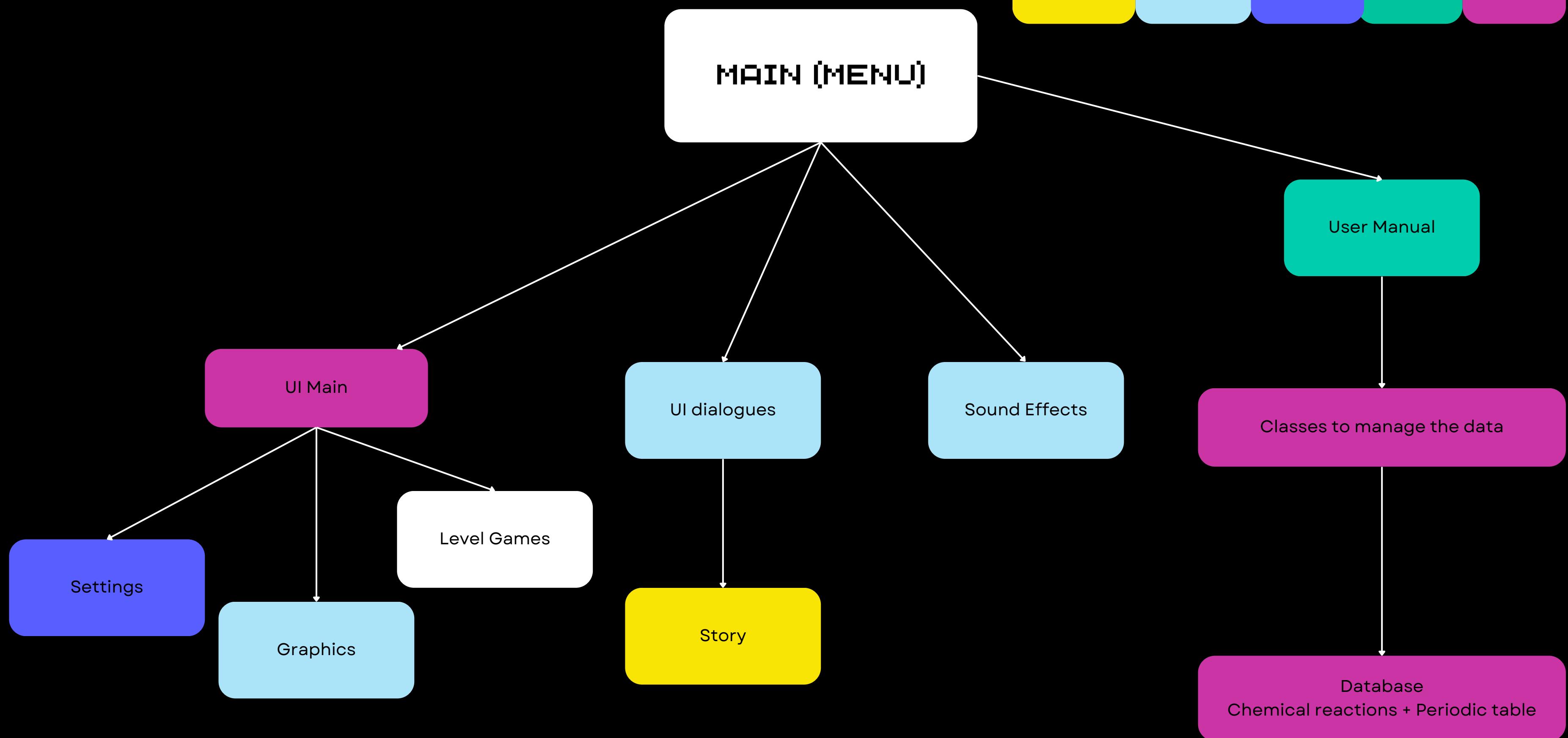
Laila

Eliza

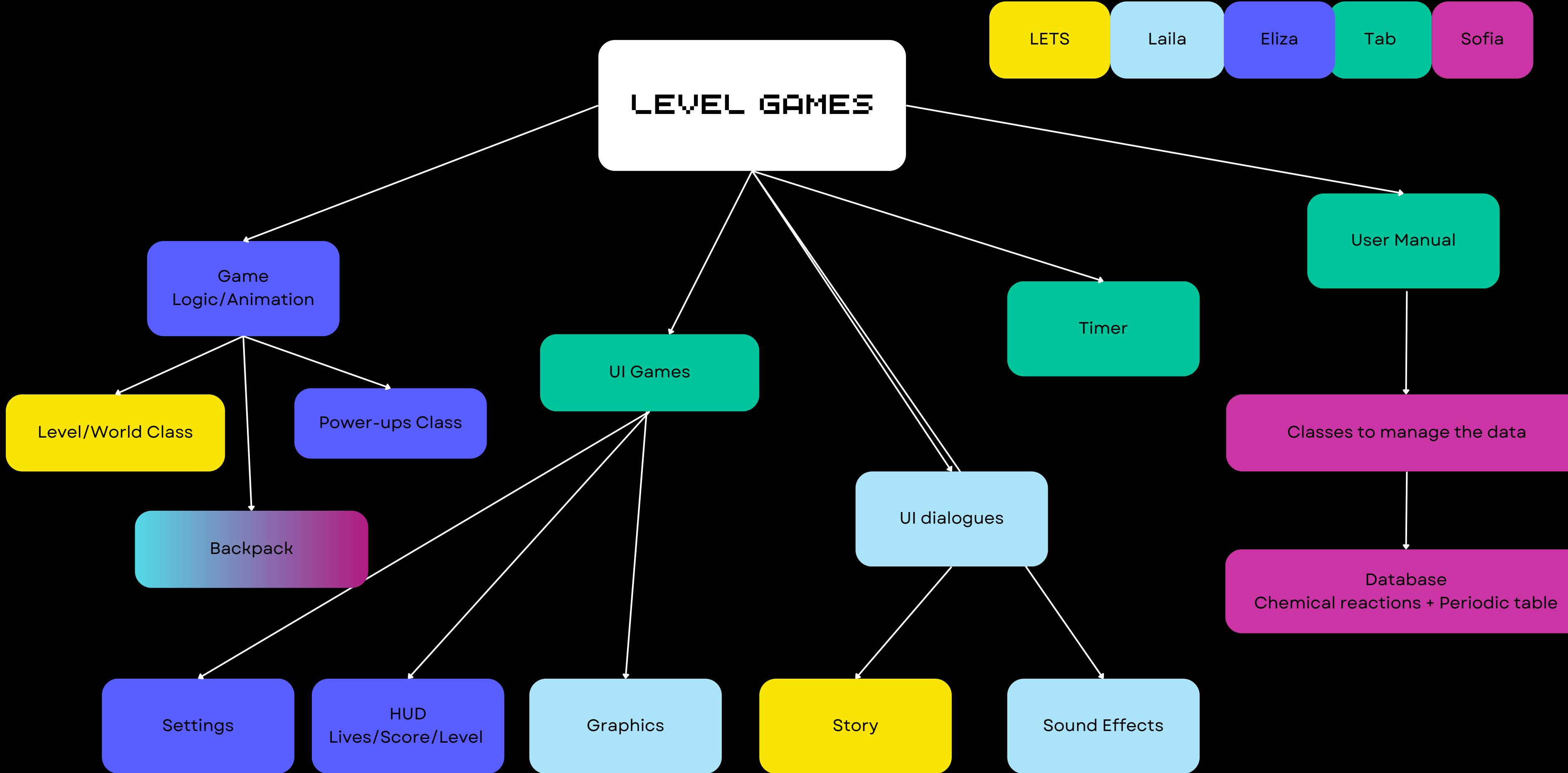
Tab

Sofia

# PROJECT STRUCTURE



# PROJECT STRUCTURE



MENU



THANK YOU!

# LET'S CHEM

Coming to Your Computers  
May 2025