Codementum

The Easiest Way to Learn Coding

Develop your students skill set and prepare them for the future!

The Easiest Way to Teach Coding in Schools

No previous experience in coding required

About Us

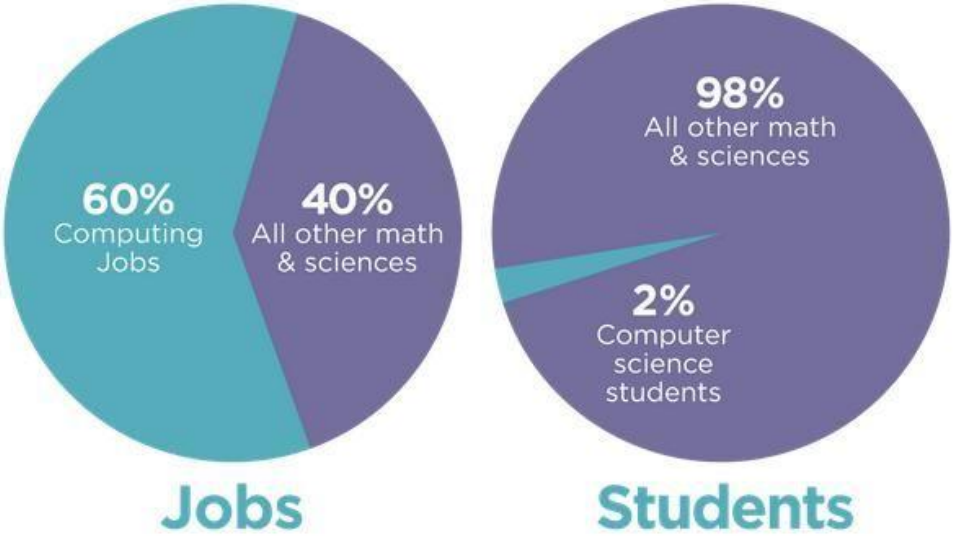
- Codementum was established to give children aged 8 to 17 years of age an online platform to learn coding, develop mobile games and applications with the coding knowledge they have learnt.
- Codementum provides all the curriculum, intuitive tools, and resources you need to run a successful CS program.
- Codementum aims to provide advanced level computer skills by increasing the algorithmic and computational thinking skills.

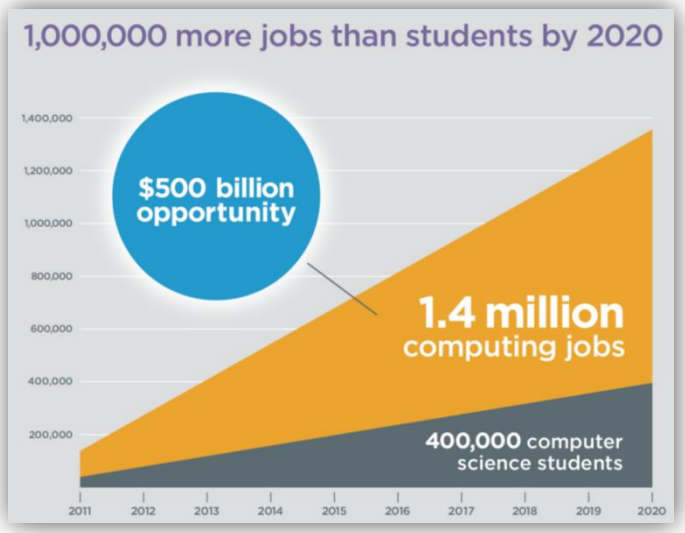
UCL Institute of Education

Participant in EDUCATE
EDUCATION • RESEARCH • EDTECH

Why Coding?

The job/student gap in Computer Science





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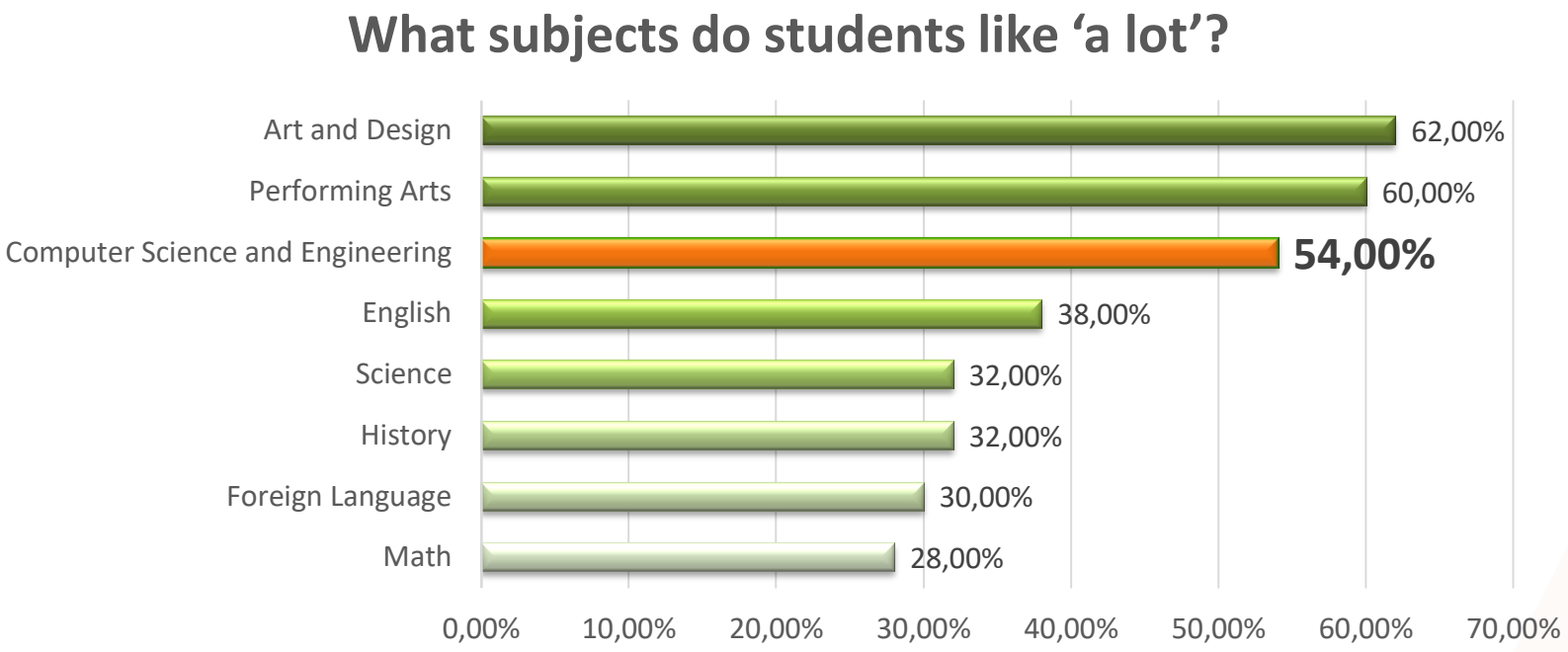
Why Coding?

Students enjoy **Computer Science** and the Arts **the most**!



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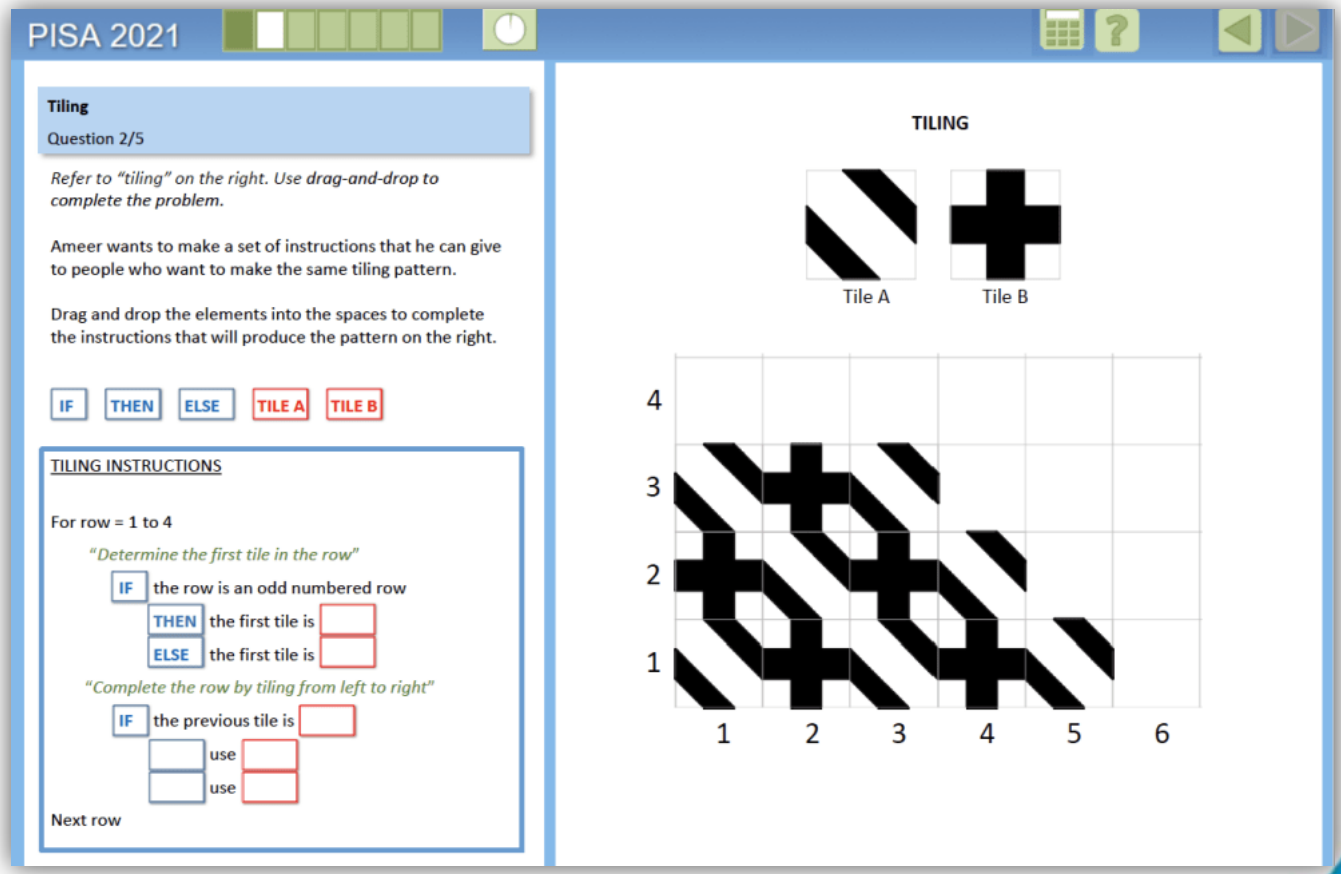
21st Century Skills

- Problem solving
- Analytical thinking
- Critical thinking
- Creative thinking
- Collaboration
- Media and information literacy
- Technology skills

PISA 2021

Computational Thinking in PISA 2021 Mathematics

Below is an example of the type of **computational thinking question** that could be included on the **2021 PISA** assessment.



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How To?

No previous experience in coding required

Coding Curriculum for every level

Real Programming Language (Python & JavaScript)

Game Based Learning

Synchronized Text-based and Block-based coding

STEM Courses & Computer Science

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Our Projects

Codementum Studio
Learn coding in a fun way by playing games!

Codementum App Maker
Develop platform-independent mobile applications!

Codementum Game Maker
Develop platform-independent mobile games!

Codementum AI-ML Maker
Learn and Develop AI & ML applications!

Codementum STEM
Write code for electronic devices!

Codementum Computer Science
Exercise for coding exams!

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Codementum Studio

7 – 13 Ages EASY

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The Easiest Way to Learn Coding

Codementum Studio

13+ Ages **ADVANCED**

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The Easiest Way to Learn Coding

Codementum Studio

7 – 13 Ages EASY

CODING ADVENTURE 1		CODING ADVENTURE 2		CODING ADVENTURE 3		CODING ADVENTURE 4	
Section	Topic	Section	Topic	Section	Topic	Section	Topic
1	The Basics	8	Conditional Expressions - if elif	15	AND OR NOT	22	Debugging
2	Repeat Loops	9	Conditional Expressions - if else	16	Return Value	23	Functions with Parameters
3	Variables	10	Boolean Logic	17	Events	24	Character String Methods
4	Arrays	11	While Loops	18	Lists	25	Modules
5	For Loops	12	Functions	19	Sets	26	Time and Datetime Modules
6	Helper Methods	13	Parameters	20	Dictionaries	27	Defining Classes
7	Conditional Expressions - if	14	Comparison Operators	21	Mathematical operations	28	Database

13+ Ages ADVANCED

CODING ADVENTURE 1		CODING ADVENTURE 2		CODING ADVENTURE 3		CODING ADVENTURE 4	
Section	Topic	Section	Topic	Section	Topic	Section	Topic
1	The Basics	8	Conditional Expressions - if elif	15	AND OR NOT	22	Debugging
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Curriculum

LEGEND	
CS-U	Computer Science Unplugged
CS-F	CS Fundamentals
CS-FA	CS Fundamentals Advanced
CS-T	Computer Science Theory
CS-A	Computer Science Algorithm
ST-PA	Studio Python Advanced
ST-JA	Studio JavaScript Advanced
AP-I	App Maker Intermediate
GM-I	Game Maker Intermediate
AI-B	AI-ML Maker Beginner
AI-B	AI-ML Maker Advanced
AR-B	AR-VR Maker Beginner
AR-A	AR-VR Maker Advanced
STEM-PA	STEM Python Advanced

CSTA K-12 COMPUTER SCIENCE STANDARDS

ISTE Standards

CODEMENTUM CURRICULUM OFFER

Academic Program			PYP					MYP			IGCSE		IBDP	
CSTA Grades		K-2			G3-5			6-8			9-10		11-12	
Grade Level		KG	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
Module 1	Week1	CS-U01	CS-F01	CS-FA01	ST-B01	ST-PB01	ST-PB10	CS-T01	CS-T06	CS-T11	CS-T20	CS-T29	CS-TA01	CS-TA10
	Week2	CS-U02	CS-F02	CS-FA02	ST-B02	ST-PB02	ST-PB11	CS-T02	CS-T07	CS-T12	CS-T21	CS-T30	CS-TA02	CS-TA11
	Week3	CS-U03	CS-F03	CS-FA03	ST-B03	ST-PB03	ST-PB12	CS-T03	CS-T08	CS-T13	CS-T22	CS-T31	CS-TA03	CS-TA12
	Week4	CS-U04	CS-F04	CS-FA04	ST-B04	ST-PB04	ST-PB13	CS-T04	CS-T09	CS-T14	CS-T23	CS-T32	CS-TA04	CS-TA13
	Week5	CS-U05	CS-F05	CS-FA05	ST-B05	ST-PB05	ST-PB14	CS-T05	CS-T10	CS-T15	CS-T24	CS-T33	CS-TA05	CS-TA14
	Week6	CS-U06	CS-F06	CS-FA06	ST-B06	ST-PB06	ST-PB15	CS-A01	CS-A05	CS-T16	CS-T25	CS-T34	CS-TA06	CS-TA15
	Week7	CS-U07	CS-F07	CS-FA07	ST-B07	ST-PB07	ST-PB16	CS-A02	CS-A06	CS-T17	CS-T26	CS-T35	CS-TA07	CS-TA16
	Week8	CS-U08	CS-F08	CS-FA08	ST-B08	ST-PB08	ST-PB17	CS-A03	CS-A07	CS-T18	CS-T27	CS-T36	CS-TA08	CS-TA17
	Week9	CS-U09	CS-F09	CS-FA09	ST-B09	ST-PB09	ST-PB18	CS-A04	CS-A08	CS-T19	CS-T28	CS-T37	CS-TA09	CS-TA18
Module 2	Week10	CS-U10	CS-F10	CS-FA10	ST-B10	ST-JB01	ST-B10	ST-PA01	ST-PA10	ST-PA19	ST-PA28	CS-T38	AP-A01	GM-A01
	Week11	CS-U11	CS-F11	CS-FA11	ST-B11	ST-JB02	ST-JB01	ST-PA02	ST-PA11	ST-PA20	ST-PA29	CS-T39	AP-A02	GM-A02
	Week12	CS-U12	CS-F12	CS-FA12	ST-B12	ST-JB03	ST-JB02	ST-PA03	ST-PA12	ST-PA21	ST-PA30	ST-PA38	AP-A03	GM-A03
	Week13	CS-U13	CS-F13	CS-FA13	ST-B13	ST-JB04	ST-JB03	ST-PA04	ST-PA13	ST-PA22	ST-PA31	ST-PA39	AP-A04	GM-A04
	Week14	CS-U14	CS-F14	CS-FA14	ST-B14	ST-JB05	ST-JB04	ST-PA05	ST-PA14	ST-PA23	ST-PA32	ST-PA40	AP-A05	GM-A05
	Week15	CS-U15	CS-F15	CS-FA15	ST-B15	ST-JB06	ST-JB05	ST-PA06	ST-PA15	ST-PA24	ST-PA33	ST-PA41	AP-A06	GM-A06
	Week16	CS-U16	CS-F16	CS-FA16	ST-B16	ST-JB07	ST-JB06	ST-PA07	ST-PA16	ST-PA25	ST-PA34	ST-PA42	AP-A07	GM-A07
	Week17	CS-U17	CS-F17	CS-FA17	ST-B17	ST-JB08	ST-JB07	ST-PA08	ST-PA17	ST-PA26	ST-PA35	ST-PA43	AP-A08	GM-A08
	Week18	CS-U18	CS-F18	CS-FA18	AP-B01	ST-JB09	ST-JB08	ST-PA09	ST-PA18	ST-PA27	ST-PA36	ST-PA44	AP-A09	GM-A09
Module 3	Week19	CS-U19	CS-F19	CS-FA19	AP-B02	AP-B01	GM-B01	ST-JA01	ST-JA01	ST-JA19	AP-I01	GM-I01	AI-B01	AR-B01
	Week20	CS-U20	CS-F20	CS-FA20	AP-B03	AP-B02	GM-B02	ST-JA02	ST-JA02	ST-JA20	AP-I02	GM-I02	AI-B02	AR-B02
	Week21	CS-U21	CS-F21	CS-FA21	AP-B04	AP-B03	GM-B03	ST-JA03	ST-JA03	ST-JA21	AP-I03	GM-I03	AI-B03	AR-B03
	Week22	CS-U22	CS-F22	CS-FA22	AP-B05	AP-B04	GM-B04	ST-JA04	ST-JA04	ST-JA22	AP-I04	GM-I04	AI-B04	AR-B04
	Week23	CS-U23	CS-F23	CS-FA23	AP-B06	AP-B05	GM-B05	ST-JA05	ST-JA05	ST-JA23	AP-I05	GM-I05	AI-B05	AR-B05
	Week24	CS-U24	CS-F24	CS-FA24	AP-B07	AP-B06	GM-B06	ST-JA06	ST-JA06	ST-JA24	AP-I06	GM-I06	AI-B06	AR-B06
	Week25	CS-U25	CS-F25	CS-FA25	AP-B08	AP-B07	GM-B07	ST-JA07	ST-JA07	ST-JA25	AP-I07	GM-I07	AI-B07	AR-B07
	Week26	CS-U26	CS-F26	CS-FA26	AP-B09	AP-B08	GM-B08	ST-JA08	ST-JA08	ST-JA26	AP-I08	GM-I08	AI-B08	AR-B08
	Week27	CS-U27	CS-F27	CS-FA27	GM-B01	AP-B09	GM-B09	ST-JA09	ST-JA09	ST-JA27	AP-I09	GM-I09	AI-B09	AR-B09
Module 4	Week28	CS-U28	CS-F28	CS-FA28	GM-B02	STEM-B01	STEM-B10	AP-I01	GM-I01	STEM-P01	STEM-P10	STEM-P19	AI-A01	AR-A01
	Week29	CS-U29	CS-F29	CS-FA29	GM-B03	STEM-B02	STEM-B11	AP-I02	GM-I02	STEM-P02	STEM-P11	STEM-P20	AI-A02	AR-A02
	Week30	CS-U30	CS-F30	CS-FA30	GM-B04	STEM-B03	STEM-B12	AP-I03	GM-I03	STEM-P03	STEM-P12	STEM-P21	AI-A03	AR-A03
	Week31	CS-U31	CS-F31	CS-FA31	GM-B05	STEM-B04	STEM-B13	AP-I04	GM-I04	STEM-P04	STEM-P13	STEM-P22	AI-A04	AR-A04
	Week32	CS-U32	CS-F32	CS-FA32	GM-B06	STEM-B05	STEM-B14	AP-I05	GM-I05	STEM-P05	STEM-P14	STEM-P23	AI-A05	AR-A05
	Week33	CS-U33	CS-F33	CS-FA33	GM-B07	STEM-B06	STEM-B15	AP-I06	GM-I06	STEM-P06	STEM-P15	STEM-P24	AI-A06	AR-A06
	Week34	CS-U34	CS-F34	CS-FA34	GM-B08	STEM-B07	STEM-B16	AP-I07	GM-I07	STEM-P07	STEM-P16	STEM-P25	AI-A07	AR-A07
	Week35	CS-U35	CS-F35	CS-FA35	GM-B09	STEM-B08	STEM-B17	AP-I08	GM-I08	STEM-P08	STEM-P17	STEM-P26	AI-A08	AR-A08
	Week36	CS-U36	CS-F36	CS-FA36	GM-B10	STEM-B09	STEM-B18	AP-I09	GM-I09	STEM-P09	STEM-P18	STEM-P27	AI-A09	AR-A09

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Curriculum Detail

PRIMARY Computer Science

Grade 3

No	Short Code	Lesson Name	Project Name
1	ST-B01	Studio Block	The Basics
2	ST-B02	Studio Block	Repeat Loops
3	ST-B03	Studio Block	Variables
4	ST-B04	Studio Block	Arrays
5	ST-B05	Studio Block	For Loops
6	ST-B06	Studio Block	For Loops
7	ST-B07	Studio Block	Helper Methods
8	ST-B08	Studio Block	Conditional Expressions - if
9	ST-B09	Studio Block	Conditional Expressions - if Continue
10	ST-B10	Studio Block	Conditional Expressions - if elif
11	ST-B11	Studio Block	Conditional Expressions - if else
12	ST-B12	Studio Block	Boolean Logic
13	ST-B13	Studio Block	While Loops
14	ST-B14	Studio Block	Functions
15	ST-B15	Studio Block	Parameters
16	ST-B16	Studio Block	Comparison Operators
17	ST-B17	Studio Block	Comparison Operators
18	AP-B01	App Maker	Photogram
19	AP-B02	App Maker	Todo App
20	AP-B03	App Maker	Project3
21	AP-B04	App Maker	Project4
22	AP-B05	App Maker	Project5
23	AP-B06	App Maker	Project6
24	AP-B07	App Maker	Project7
25	AP-B08	App Maker	Project8
26	AP-B09	App Maker	Project9
27	GM-B01	Game Maker	Photogram
28	GM-B02	Game Maker	Todo App
29	GM-B03	Game Maker	Project3
30	GM-B04	Game Maker	Project4
31	GM-B05	Game Maker	Project5
32	GM-B06	Game Maker	Project6
33	GM-B07	Game Maker	Project7
34	GM-B08	Game Maker	Project8
35	GM-B09	Game Maker	Project9
36	GM-B10	Game Maker	Project10

Grade 4

No	Short Code	Lesson Name	Project Name
1	ST-PB01	Studio Block	The Basics
2	ST-PB02	Studio Block	Repeat Loops
3	ST-PB03	Studio Block	Variables
4	ST-PB04	Studio Block	Arrays
5	ST-PB05	Studio Block	For Loops
6	ST-PB06	Studio Block	For Loops
7	ST-PB07	Studio Block	Helper Methods
8	ST-PB08	Studio Block	Conditional Expressions - if
9	ST-PB09	Studio Block	Conditional Expressions - if Continue
10	ST-JB01	Studio Block	The Basics
11	ST-JB02	Studio Block	Repeat Loops
12	ST-JB03	Studio Block	Variables
13	ST-JB04	Studio Block	Arrays
14	ST-JB05	Studio Block	For Loops
15	ST-JB06	Studio Block	For Loops
16	ST-JB07	Studio Block	Helper Methods
17	ST-JB08	Studio Block	Conditional Expressions - if
18	ST-JB09	Studio Block	Conditional Expressions - if Continue
19	AP-B01	App Maker	Photogram
20	AP-B02	App Maker	Todo App
21	AP-B03	App Maker	Project3
22	AP-B04	App Maker	Project4
23	AP-B05	App Maker	Project5
24	AP-B06	App Maker	Project6
25	AP-B07	App Maker	Project7
26	AP-B08	App Maker	Project8
27	AP-B09	App Maker	Project9
28	STEM-B01	Micro:Bit	HelloWorld
29	STEM-B02	Micro:Bit	Countdown
30	STEM-B03	Micro:Bit	ClearScreen
31	STEM-B04	Micro:Bit	ILoveMicrobit
32	STEM-B05	Micro:Bit	MyGraffeisHappy
33	STEM-B06	Micro:Bit	WakeUp
34	STEM-B07	Micro:Bit	Puzzle
35	STEM-B08	Micro:Bit	Voting
36	STEM-B09	Micro:Bit	TriangularCard

Grade 5

No	Short Code	Lesson Name	Project Name
1	ST-PB10	Studio Block	Conditional Expressions - if elif
2	ST-PB11	Studio Block	Conditional Expressions - if else
3	ST-PB12	Studio Block	Boolean Logic
4	ST-PB13	Studio Block	While Loops
5	ST-PB14	Studio Block	Functions
6	ST-PB15	Studio Block	Parameters
7	ST-PB16	Studio Block	Comparison Operators
8	ST-PB17	Studio Block	Comparison Operators 2
9	ST-PB18	Studio Block	AND OR NOT
10	ST-B10	Studio Block	AND OR NOT
11	ST-JB01	Studio Block	Return Value
12	ST-JB02	Studio Block	Events
13	ST-JB03	Studio Block	Lists
14	ST-JB04	Studio Block	Sets
15	ST-JB05	Studio Block	Dictionaries
16	ST-JB06	Studio Block	Mathematical operations
17	ST-JB07	Studio Block	Mathematical operations
18	ST-JB08	Studio Block	Mathematical operations
19	GM-B01	Game Maker	Photogram
20	GM-B02	Game Maker	Todo App
21	GM-B03	Game Maker	Project3
22	GM-B04	Game Maker	Project4
23	GM-B05	Game Maker	Project5
24	GM-B06	Game Maker	Project6
25	GM-B07	Game Maker	Project7
26	GM-B08	Game Maker	Project8
27	GM-B09	Game Maker	Project9
28	STEM-B10	Micro:Bit - Pyth	Dancing Men
29	STEM-B11	Micro:Bit - Pyth	Feelings_ReactionGame
30	STEM-B12	Micro:Bit - Pyth	Kangaroo
31	STEM-B13	Micro:Bit - Pyth	Divisibility
32	STEM-B14	Micro:Bit - Pyth	Divisibility
33	STEM-B15	Micro:Bit - Pyth	HotOrCold
34	STEM-B16	Micro:Bit - Pyth	CatchBalloon
35	STEM-B17	Micro:Bit - Pyth	BasicCalculator
36	STEM-B18	Micro:Bit - Pyth	SportCrunches

MYP Computer Science

Grade 6

No	Short Code	Lesson Name	Topic
1	CS-T01	Theory of CS	Data representation
2	CS-T02	Theory of CS	The binary system
3	CS-T03	Theory of CS	Measurement of computer memories
4	CS-T04	Theory of CS	Example use of binary
5	CS-T05	Theory of CS	The hexadecimal system
6	CS-A01	Pseudocode	Project 1
7	CS-A02	Pseudocode	Project 2
8	CS-A03	Pseudocode	Project 3
9	CS-A04	Pseudocode	Project 4
10	ST-PA01	Studio Python	The Basics
11	ST-PA02	Studio Python	Repeat Loops
12	ST-PA03	Studio Python	Variables
13	ST-PA04	Studio Python	Arrays
14	ST-PA05	Studio Python	For Loops
15	ST-PA06	Studio Python	For Loops
16	ST-PA07	Studio Python	Helper Methods
17	ST-PA08	Studio Python	Conditional Expressions - if
18	ST-PA09	Studio Python	Conditional Expressions - if 2
19	ST-JA01	Studio JS	The Basics
20	ST-JA02	Studio JS	Repeat Loops
21	ST-JA03	Studio JS	Variables
22	ST-JA04	Studio JS	Arrays
23	ST-JA05	Studio JS	For Loops
24	ST-JA06	Studio JS	For Loops
25	ST-JA07	Studio JS	Helper Methods
26	ST-JA08	Studio JS	Conditional Expressions - if
27	ST-JA09	Studio JS	Conditional Expressions - if 2
28	AP-I01	App Maker	Photogram
29	AP-I02	App Maker	Todo App
30	AP-I03	App Maker	Project3
31	AP-I04	App Maker	Project4
32	AP-I05	App Maker	Project5
33	AP-I06	App Maker	Project6
34	AP-I07	App Maker	Project7
35	AP-I08	App Maker	Project8
36	AP-I09	App Maker	Project9

Grade 7

No	Short Code	Lesson Name	Topic
1	CS-T06	Theory of CS	Use of the hexadecimal system
2	CS-T07	Theory of CS	Communication and internet technologies
3	CS-T08	Theory of CS	Data transmission
4	CS-T09	Theory of CS	Error-checking methods
5	CS-T10	Theory of CS	Internet Technologies
6	CS-A05	Flowchart	Project 1
7	CS-A06	Flowchart	Project 2
8	CS-A07	Flowchart	Project 3
9	CS-A08	Flowchart	Project 4
10	ST-PA10	Studio Python	Conditional Expressions - if elif
11	ST-PA11	Studio Python	Conditional Expressions - if else
12	ST-PA12	Studio Python	Boolean Logic
13	ST-PA13	Studio Python	While Loops
14	ST-PA14	Studio Python	Functions
15	ST-PA15	Studio Python	Parameters
16	ST-PA16	Studio Python	Comparison Operators
17	ST-PA17	Studio Python	Comparison Operators 2
18	ST-PA18	Studio Python	AND OR NOT
19	ST-JA01	Studio JS	Conditional Expressions - if elif
20	ST-JA02	Studio JS	Conditional Expressions - if else
21	ST-JA03	Studio JS	Boolean Logic
22	ST-JA04	Studio JS	While Loops
23	ST-JA05	Studio JS	Functions
24	ST-JA06	Studio JS	Parameters
25	ST-JA07	Studio JS	Comparison Operators
26	ST-JA08	Studio JS	Comparison Operators 2
27	ST-JA09	Studio JS	AND OR NOT
28	GM-I01	App Maker	Photogram
29	GM-I02	App Maker	Todo App
30	GM-I03	App Maker	Project3
31	GM-I04	App Maker	Project4
32	GM-I05	App Maker	Project5
33	GM-I06	App Maker	Project6
34	GM-I07	App Maker	Project7
35	GM-I08	App Maker	Project8
36	GM-I09	App Maker	Project9

Grade 8

No	Short Code	Lesson Name	Topic
1	CS-T11	Theory of CS	Logic gates and logic circuits
2	CS-T12	Theory of CS	Logic gates
3	CS-T13	Theory of CS	Truth tables
4	CS-T14	Theory of CS	The function of the six logic gates
5	CS-T15	Theory of CS	Logic circuits
6	CS-T16	Theory of CS	Logic circuits in the real world
7	CS-T17	Theory of CS	Logic circuits Project 1
8	CS-T18	Theory of CS	Logic circuits Project 2
9	CS-T19	Theory of CS	Logic circuits Project 3
10	ST-PA19	Studio Python	Return Value
11	ST-PA20	Studio Python	Return Value
12	ST-PA21	Studio Python	Return Value
13	ST-PA22	Studio Python	Events
14	ST-PA23	Studio Python	Events
15	ST-PA24	Studio Python	Events
16	ST-PA25	Studio Python	Lists
17	ST-PA26	Studio Python	Lists
18	ST-PA27	Studio Python	Lists
19	ST-JA19	Studio JS	Return Value
20	ST-JA20	Studio JS	Return Value
21	ST-JA21	Studio JS	Return Value
22	ST-JA22	Studio JS	Events
23	ST-JA23	Studio JS	Events
24	ST-JA24	Studio JS	Events
25	ST-JA25	Studio JS	Lists
26	ST-JA26	Studio JS	Lists
27	ST-JA27	Studio JS	Lists
28	STEM-P01	Micro:Bit	HelloWorld
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33	STEM-P06	Micro:Bit	WakeUp
34	STEM-P07	Micro:Bit	Puzzle
35	STEM-P08	Micro:Bit	Voting
36	STEM-P09	Micro:Bit	TriangularCard

IGCSE Computer Science

Grade 9

No	Short Code	Lesson Name	Topic
1	CS-T20	Theory of CS	Operating systems
2	CS-T21	Theory of CS	Interrupts
3	CS-T22	Theory of CS	Computer architecture
4	CS-T23	Theory of CS	The fetch–execute cycle
5	CS-T24	Theory of CS	Input devices
6	CS-T25	Theory of CS	Output devices
7	CS-T26	Theory of CS	File formats
8	CS-T27	Theory of CS	Lossless and lossy file compression
9	CS-T28	Theory of CS	Memory and storage
10	ST-PA28	Studio Python	Dictionaries
11	ST-PA29	Studio Python	Mathematical operations
12	ST-PA30	Studio Python	Mathematical operations
13	ST-PA31	Studio Python	Debugging
14	ST-PA32	Studio Python	Debugging
15	ST-PA33	Studio Python	Functions with Parameters
16	ST-PA34	Studio Python	Functions with Parameters
17	ST-PA35	Studio Python	Character String Methods
18	ST-PA36	Studio Python	Character String Methods
19	AP-I01	App Maker	Photogram
20	AP-I02	App Maker	Todo App
21	AP-I03	App Maker	Project3
22	AP-I04	App Maker	Project4
23	AP-I05	App Maker	Project5
24	AP-I06	App Maker	Project6
25	AP-I07	App Maker	Project7
26	AP-I08	App Maker	Project8
27	AP-I09	App Maker	Project9
28	STEM-P10	Micro:Bit - Python	Dancing Men
29	STEM-P11	Micro:Bit - Python	Feelings_ReactionGame
30	STEM-P12	Micro:Bit - Python	Kangaroo
31	STEM-P13	Micro:Bit - Python	Divisibility
32	STEM-P14	Micro:Bit - Python	Divisibility
33	STEM-P15	Micro:Bit - Python	HotOrCold
34	STEM-P16	Micro:Bit - Python	CatchBalloon
35	STEM-P17	Micro:Bit - Python	BasicCalculator
36	STEM-P18	Micro:Bit - Python	SportCrunches

Grade 10

No	Lesson Name	Topic
1	Theory of CS	Programming languages
2	Theory of CS	Interpreter and Translators
3	Theory of CS	Security and data integrity
4	Theory of CS	Cookies
5	Theory of CS	Loss of data and data corruption
6	Theory of CS	Firewalls and proxy servers
7	Theory of CS	Security protocols
8	Theory of CS	Encryption
9	Theory of CS	Applications
10	Theory of CS	Computer ethics
11	Theory of CS	Free software, freeware and shareware
12	Studio Python	Modules
13	Studio Python	Modules
14	Studio Python	Time and Datetime Modules
15	Studio Python	Defining Classes
16	Studio Python	Defining Classes
17	Studio Python	Database
18	Studio Python	Database
19	Game Maker	Color Puzzle
20	Game Maker	Image Match
21	Game Maker	Game3
22	Game Maker	Game4
23	Game Maker	Game5
24	Game Maker	Game6
25	Game Maker	Game7
26	Game Maker	Game8
27	Game Maker	Game9
28	Micro:Bit - Python	SayDirection
29	Micro:Bit - Python	HowFast
30	Micro:Bit - Python	SOS
31	Micro:Bit - Python	LightLevelSensor
32	Micro:Bit - Python	QuizShow
33	Micro:Bit - Python	ColorfulCompass
34	Micro:Bit - Python	BrightnessAdjustment
35	Micro:Bit - Python	Magnetometer
36	Micro:Bit - Python	ColorfulBlow

IB Computer Science

Grade 11

No	Short Code	Lesson Name	Topics
1	CS-TA01	Theory of CS	Information representation
2	CS-TA02	Theory of CS	Communication and internet technologies
3	CS-TA03	Theory of CS	Hardware
4	CS-TA04	Theory of CS	Logic gates and logic circuits
5	CS-TA05	Theory of CS	Processor fundamentals
6	CS-TA06	Theory of CS	System software
7	CS-TA07	Theory of CS	Data security, privacy and integrity
8	CS-TA08	Theory of CS	Ethics and ownership
9	CS-TA09	Theory of CS	Database and data modelling
10	AP-A01	App Maker	Photogram
11	AP-A02	App Maker	Todo App
12	AP-A03	App Maker	Project3
13	AP-A04	App Maker	Project4
14	AP-A05	App Maker	Project5
15	AP-A06	App Maker	Project6
16	AP-A07	App Maker	Project7
17	AP-A08	App Maker	Project8
18	AP-A09	App Maker	Project9
19	AI-B01	AI-ML Maker	Emotoin Analysis
20	AI-B02	AI-ML Maker	Voice Analysis
21	AI-B03	AI-ML Maker	Project3
22	AI-B04	AI-ML Maker	Project4
23	AI-B05	AI-ML Maker	Project5
24	AI-B06	AI-ML Maker	Project6
25	AI-B07	AI-ML Maker	Project7
26	AI-B08	AI-ML Maker	Project8
27	AI-B09	AI-ML Maker	Project9
28	AI-A01	AI-ML Maker	Emotoin Analysis
29	AI-A02	AI-ML Maker	Voice Analysis
30	AI-A03	AI-ML Maker	Project3
31	AI-A04	AI-ML Maker	Project4
32	AI-A05	AI-ML Maker	Project5
33	AI-A06	AI-ML Maker	Project6
34	AI-A07	AI-ML Maker	Project7
35	AI-A08	AI-ML Maker	Project8
36	AI-A09	AI-ML Maker	Project9

Grade 12

No	Lesson Name	Topics
1	Theory of CS	Data representation
2	Theory of CS	Communication and Internet technologies
3	Theory of CS	Boolean algebra and logic circuits
4	Theory of CS	Boolean algebra and logic circuits
5	Theory of CS	Processor and computer architecture
6	Theory of CS	Processor and computer architecture
7	Theory of CS	System software
8	Theory of CS	Security
9	Theory of CS	Monitoring and control systems
10	Game Maker	Color Puzzle
11	Game Maker	Image Match
12	Game Maker	Game3
13	Game Maker	Game4
14	Game Maker	Game5
15	Game Maker	Game6
16	Game Maker	Game7
17	Game Maker	Game8
18	Game Maker	Game9
19	AR-VR Maker	Project1
20	AR-VR Maker	Project2
21	AR-VR Maker	Project3
22	AR-VR Maker	Project4
23	AR-VR Maker	Project5
24	AR-VR Maker	Project6
25	AR-VR Maker	Project7
26	AR-VR Maker	Project8
27	AR-VR Maker	Project9
28	AR-VR Maker	Project1
29	AR-VR Maker	Project2
30	AR-VR Maker	Project3
31	AR-VR Maker	Project4
32	AR-VR Maker	Project5
33	AR-VR Maker	Project6
34	AR-VR Maker	Project7
35	AR-VR Maker	Project8
36	AR-VR Maker	Project9

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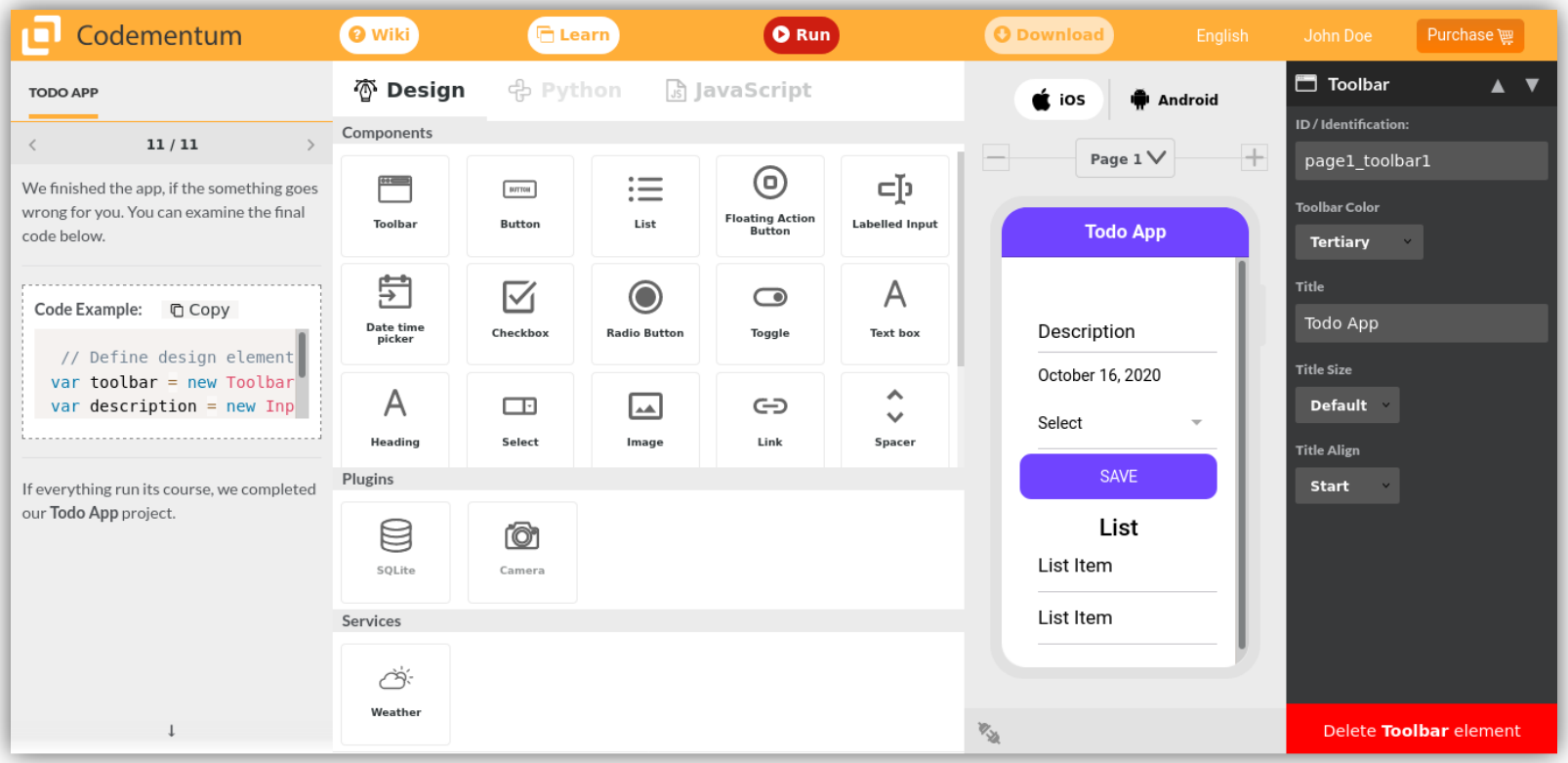
Codementum App Maker



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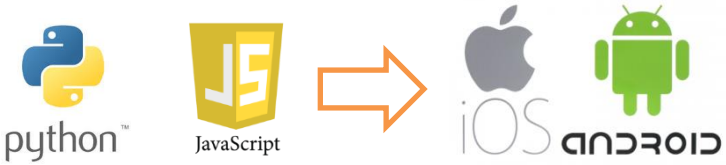

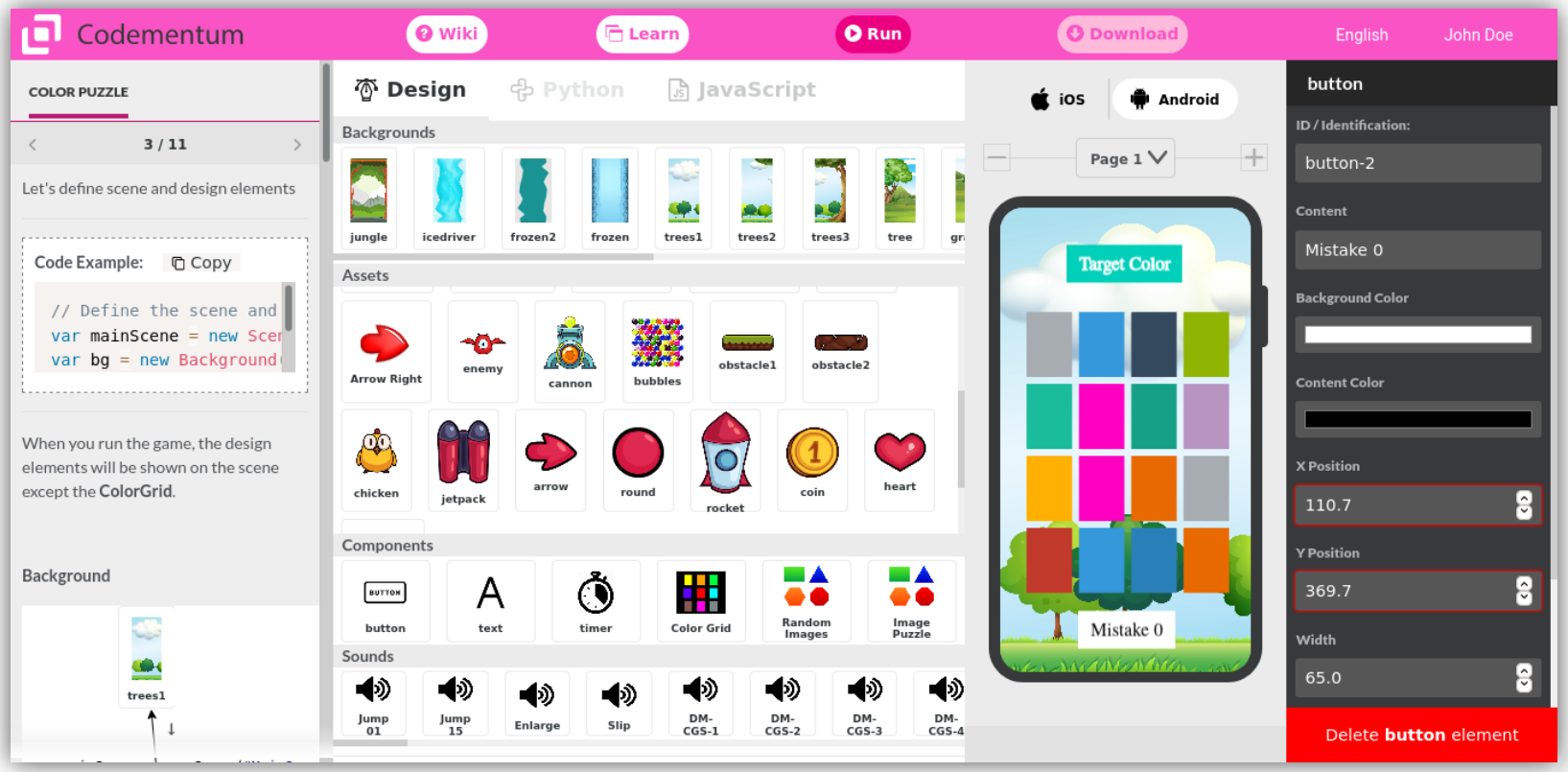

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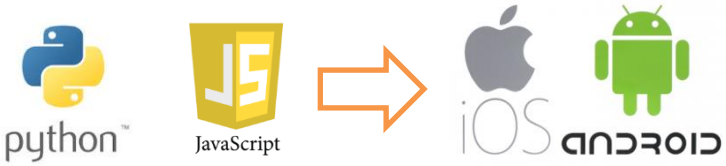
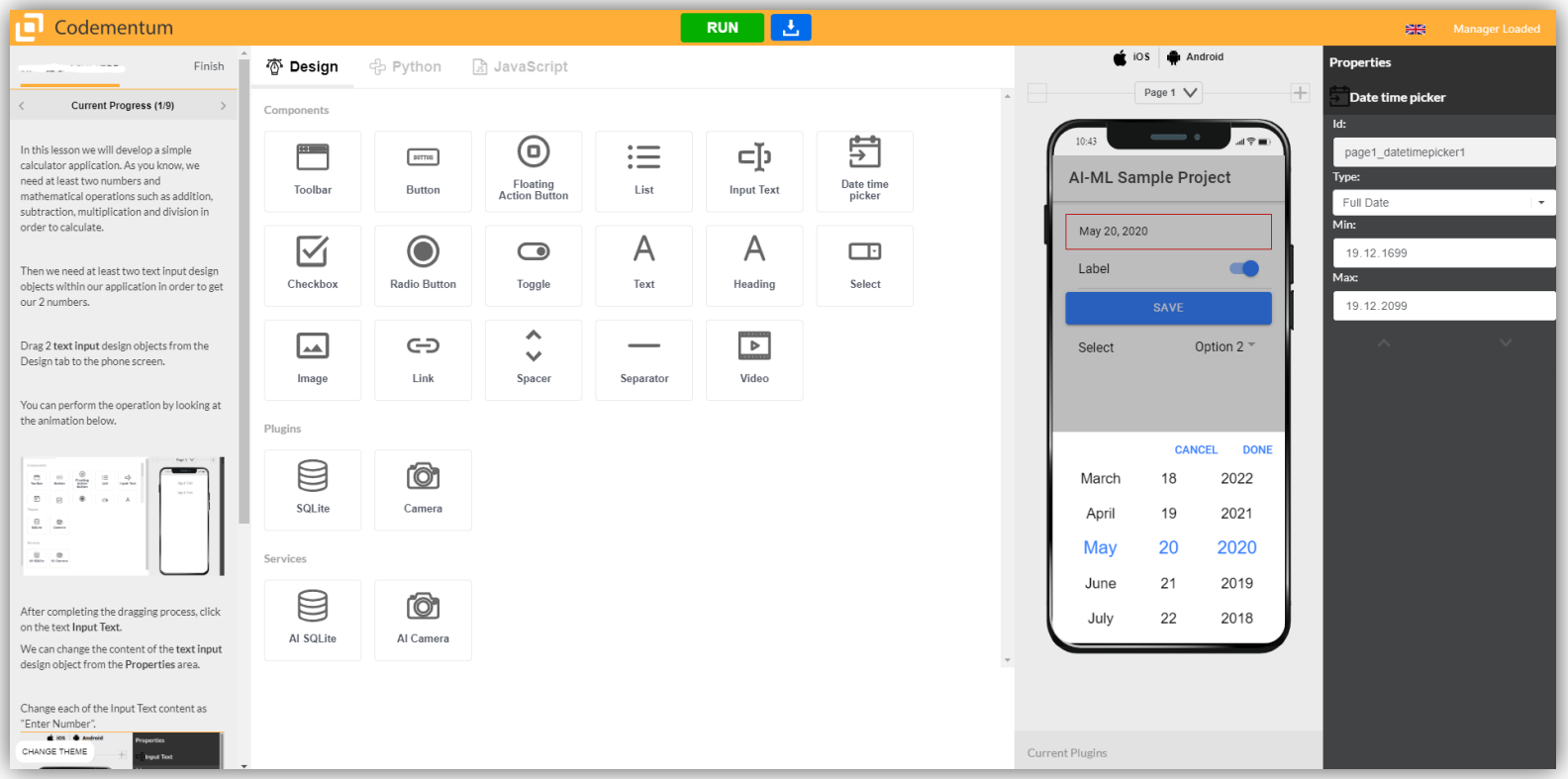
Codementum AI-ML Maker





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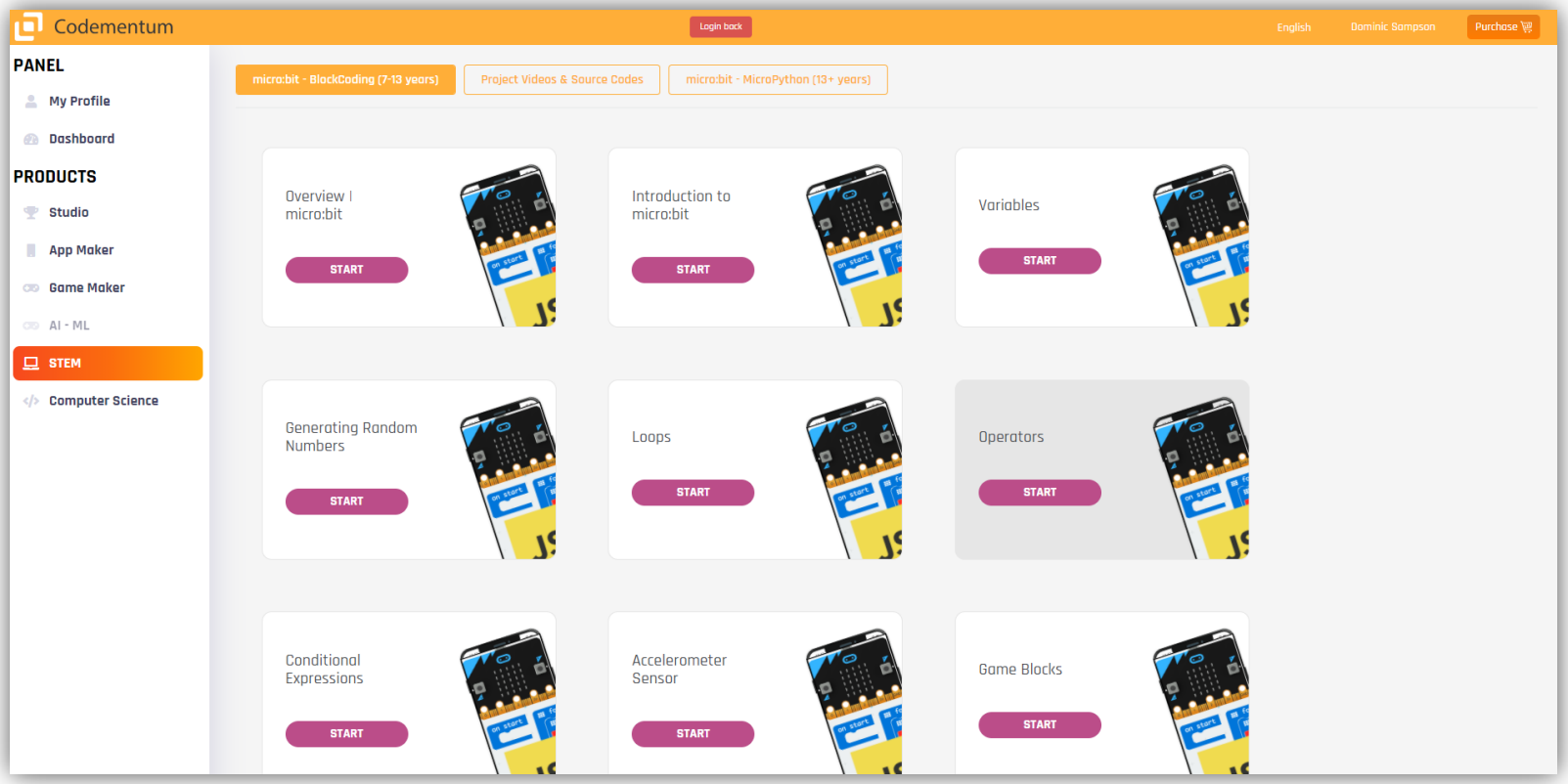
Block

python™

JavaScript

Write codes for electronic devices!



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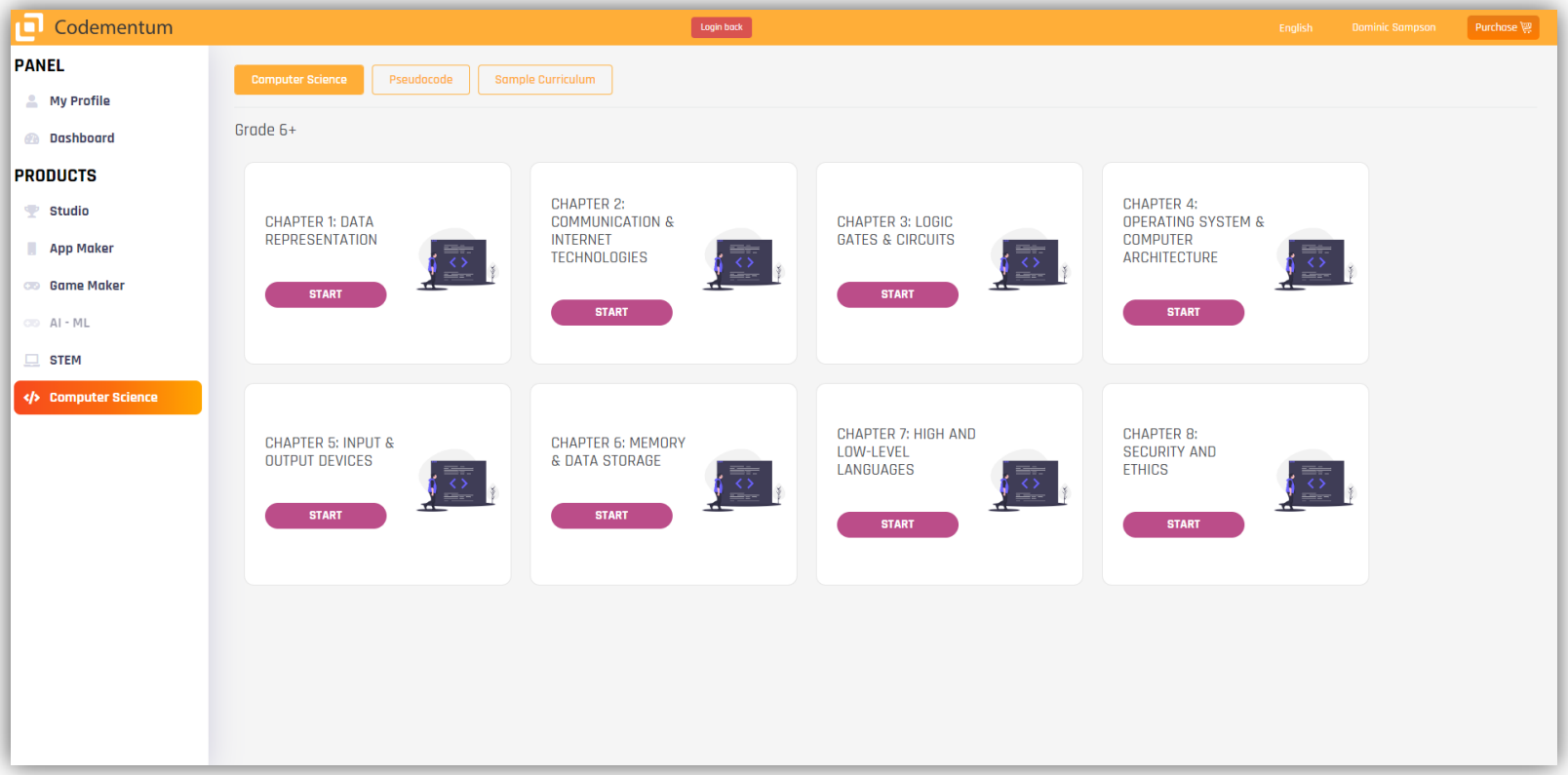
Computer Science

Exercise for coding exams!



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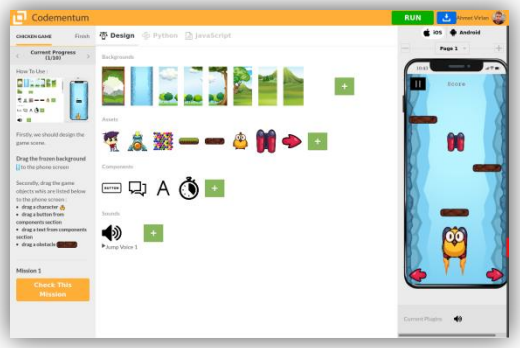
Roadmap

Beginner

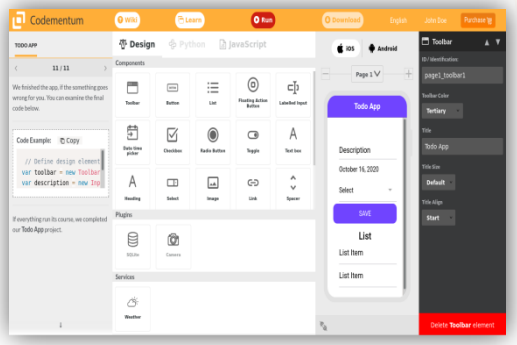
In our Codementum STUDIO platform, children will learn coding in Python and JavaScript while playing an adventurous game.

Mid Level



In our Codementum APP Maker and Codementum GAME Maker platforms, children can develop mobile applications and games for IOS and Android platforms with the help of an online trainer.

Advanced



In our Codementum AI & ML and Codementum AR & VR platforms, children will learn how to develop AI & ML, as well as AR & VR applications in a simple and creative way.

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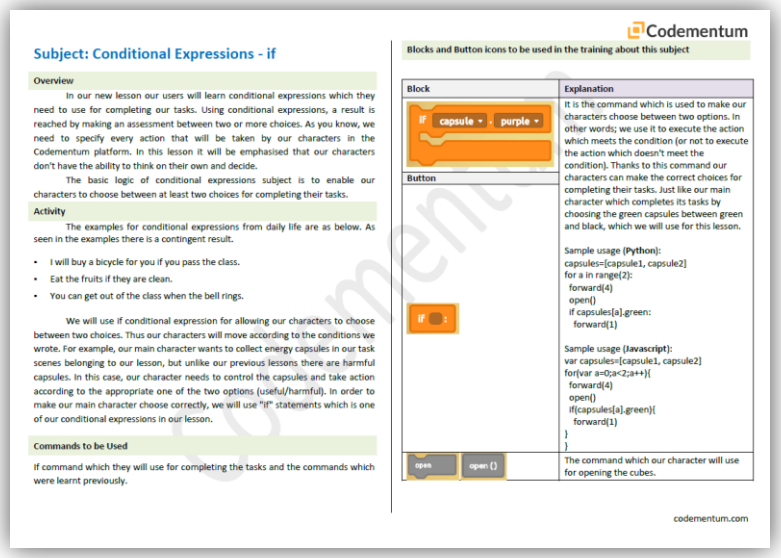
Teacher Guide



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Subject: Conditional Expressions - if

Overview

In our new lesson our users will learn conditional expressions which they need to use for completing our tasks. Using conditional expressions, a result is reached by making an assessment between two or more choices. As you know, we need to specify every action that will be taken by our characters in the Codementum platform. In this lesson it will be emphasised that our characters don't have the ability to think on their own and decide.

The basic logic of conditional expressions subject is to enable our characters to choose between at least two choices for completing their tasks.

Activity

The examples for conditional expressions from daily life are as below. As seen in the examples there is a contingent result.

- I will buy a bicycle for you if you pass the class.
- Eat the fruits if they are clean.
- You can get out of the class when the bell rings.

We will use if conditional expression for allowing our characters to choose between two choices. Thus our characters will move according to the conditions we wrote. For example, our main character wants to collect energy capsules in our task scenes belonging to our lesson, but unlike our previous lessons there are harmful capsules. In this case, our character needs to control the capsules and take action according to the appropriate one of the two options (useful/harmful). In order to make our main character choose correctly, we will use "if" statements which is one of our conditional expressions in our lesson.

Commands to be Used

If command which they will use for completing the tasks and the commands which were learnt previously.

Blocks and Button icons to be used in the training about this subject

Block	Explanation
if capsule . purple	It is the command which is used to make our characters choose between two options. In other words; we use it to execute the action which meets the condition (or not to execute the action which doesn't meet the condition). Thanks to this command our characters can make the correct choices for completing their tasks. Just like our main character which completes its tasks by choosing the green capsules between green and black, which we will use for this lesson.
Button	

if :	Sample usage (**Python**):
	capsules=[capsule1, capsule2]
	for a in range(2):
	forward(4)
	open()
	if capsules[a].green:
	forward(1)

	Sample usage (**Javascript**):
	var capsules=[capsule1, capsule2]
	for(var a=0;a<2;a++){
	forward(4)
	open()
	if(capsules[a].green){
	forward(1)
	}
	}

open open ()	The command which our character will use for opening the cubes.

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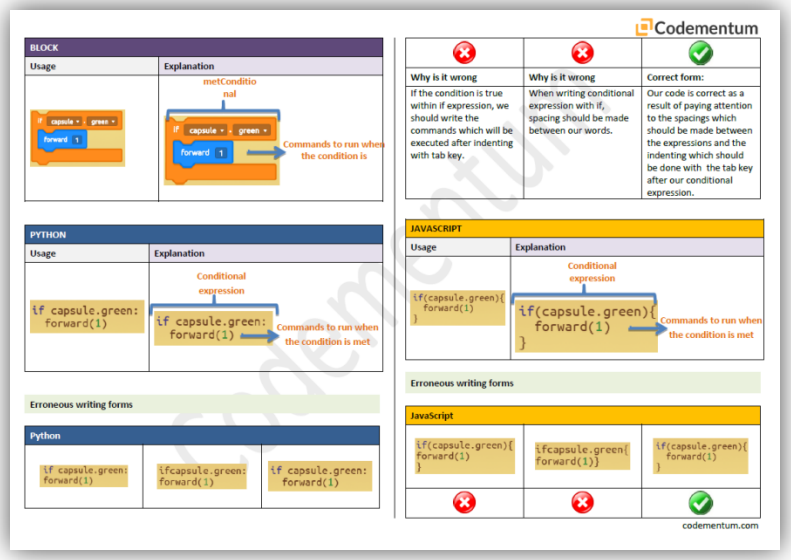

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BLOCK

Usage	Explanation
if capsule . green forward 1	metConditional if capsule . green forward 1 Commands to run when the condition is

Why is it wrong	Why is it wrong	Correct form:
If the condition is true within if expression, we should write the commands which will be executed after indenting with tab key.	When writing conditional expression with if, spacing should be made between our words.	Our code is correct as a result of paying attention to the spacings which should be made between the expressions and the indenting which should be done with the tab key after our conditional expression.

PYTHON

Usage	Explanation
if capsule.green: forward(1)	Conditional expression if capsule.green: forward(1) Commands to run when the condition is met

JAVASCRIPT

Usage	Explanation

if(capsule.green){
forward(1)
}
	Conditional expression
	if(capsule.green){
	forward(1)
	}
	Commands to run when the condition is met

Erroneous writing forms

Python		
if capsule.green: forward(1)	ifcapsule.green: forward(1)	if capsule.green: forward(1)

Erroneous writing forms

JavaScript		

if(capsule.green){
forward(1)
}
	ifcapsule.green{
	forward(1)}
		if(capsule.green){
		forward(1)
		}

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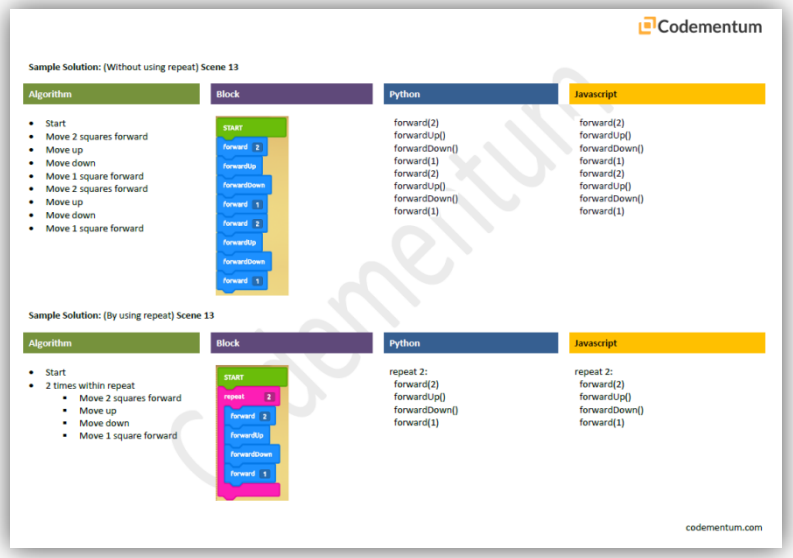

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Sample Solution: (Without using repeat) **Scene 13**

Algorithm	Block	Python	Javascript
• Start • Move 2 squares forward • Move up • Move down • Move 1 square forward • Move 2 squares forward • Move up • Move down • Move 1 square forward	START forward 2 forwardUp forwardDown forward 1 forward 2 forwardUp forwardDown forward 1	forward(2) forwardUp() forwardDown() forward(1) forward(2) forwardUp() forwardDown() forward(1)	forward(2) forwardUp() forwardDown() forward(1) forward(2) forwardUp() forwardDown() forward(1)

Sample Solution: (By using repeat) **Scene 13**

Algorithm	Block	Python	Javascript
• Start • 2 times within repeat ▪ Move 2 squares forward ▪ Move up ▪ Move down ▪ Move 1 square forward	START repeat 2 forward 2 forwardUp forwardDown forward 1	repeat 2: forward(2) forwardUp() forwardDown() forward(1)	repeat 2: forward(2) forwardUp() forwardDown() forward(1)

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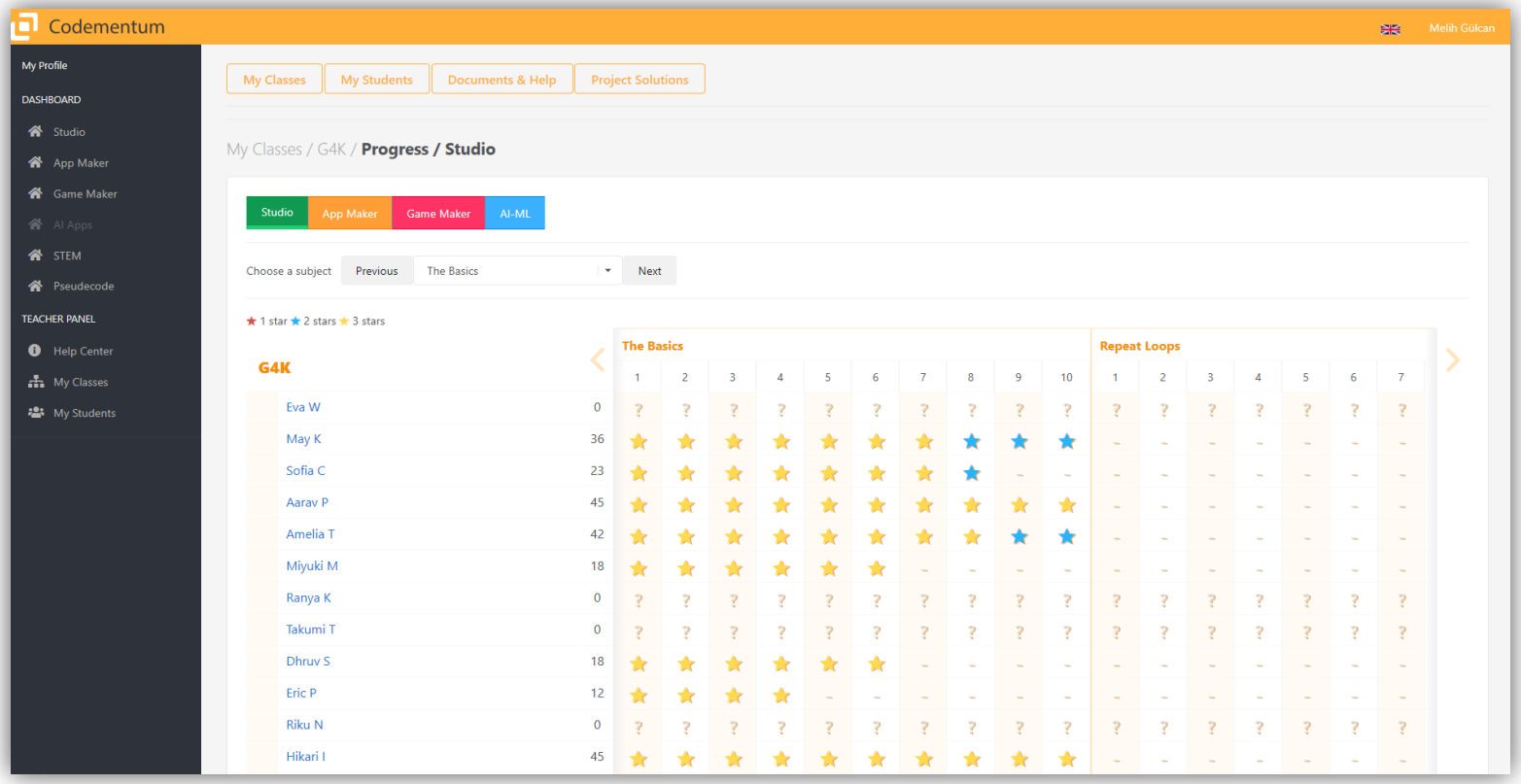
Monitor & Assess



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  Add your school/corporation logo
- **Header & Menu customization**
  Add your school/corporation colors
- **Certificate customization**

References

West Craven High School

Kings School Winchester

CATERHAM SCHOOL

Moor Row Primary School

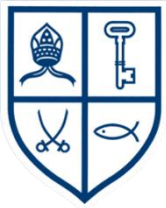
Ifield Community College

Eagle House School

ST PAUL'S ACADEMY

Bethany School

St Egwin's C.E. Middle School



Langley Park School

DUMPTON SCHOOL
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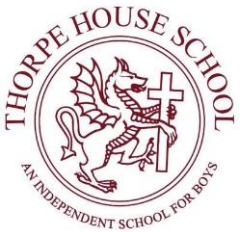
Bablake School



TORQUAY BOYS' GRAMMAR SCHOOL

Testbourne Community School

REIGATE GRAMMAR SCHOOL

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References

LeicesterHigh SCHOOL FOR GIRLS

Bedford Modern School.

THE JOHN WALLIS CHURCH OF ENGLAND ACADEMY

Bristol Grammar School

Parrs Wood High School

Parrs Wood

St Colman's College

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