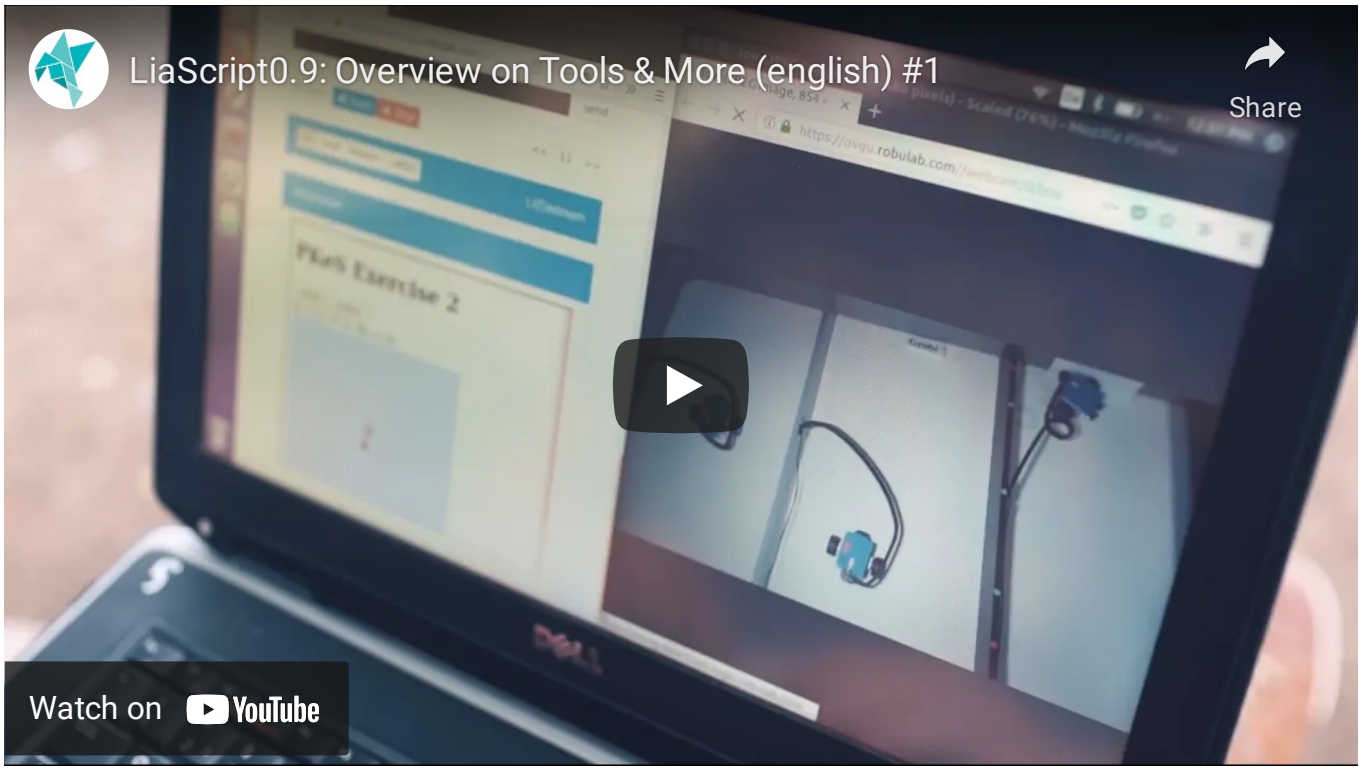
Example Course

This course illustrates the integration of LiaScript based learning content in Learning Management Systems. Visit the youtube channel of LiaScript to get an overview about already implemented features.



Interactive Tables

Click to `Bar chart` for visualizing diagram's content.

Animal	weight in kg	Lifespan years	Mitogen
Mouse	0.028	02	95
Flying squirrel	0.085	15	50
Brown bat	0.020	30	10
Sheep	90	12	95
Human	68	70	10

More information about interactive tables are available here

Quizzes

What is the derivative function of $f(x) = x^6$?

selection

What is $37 + 15$?

More information about quizzes are available here

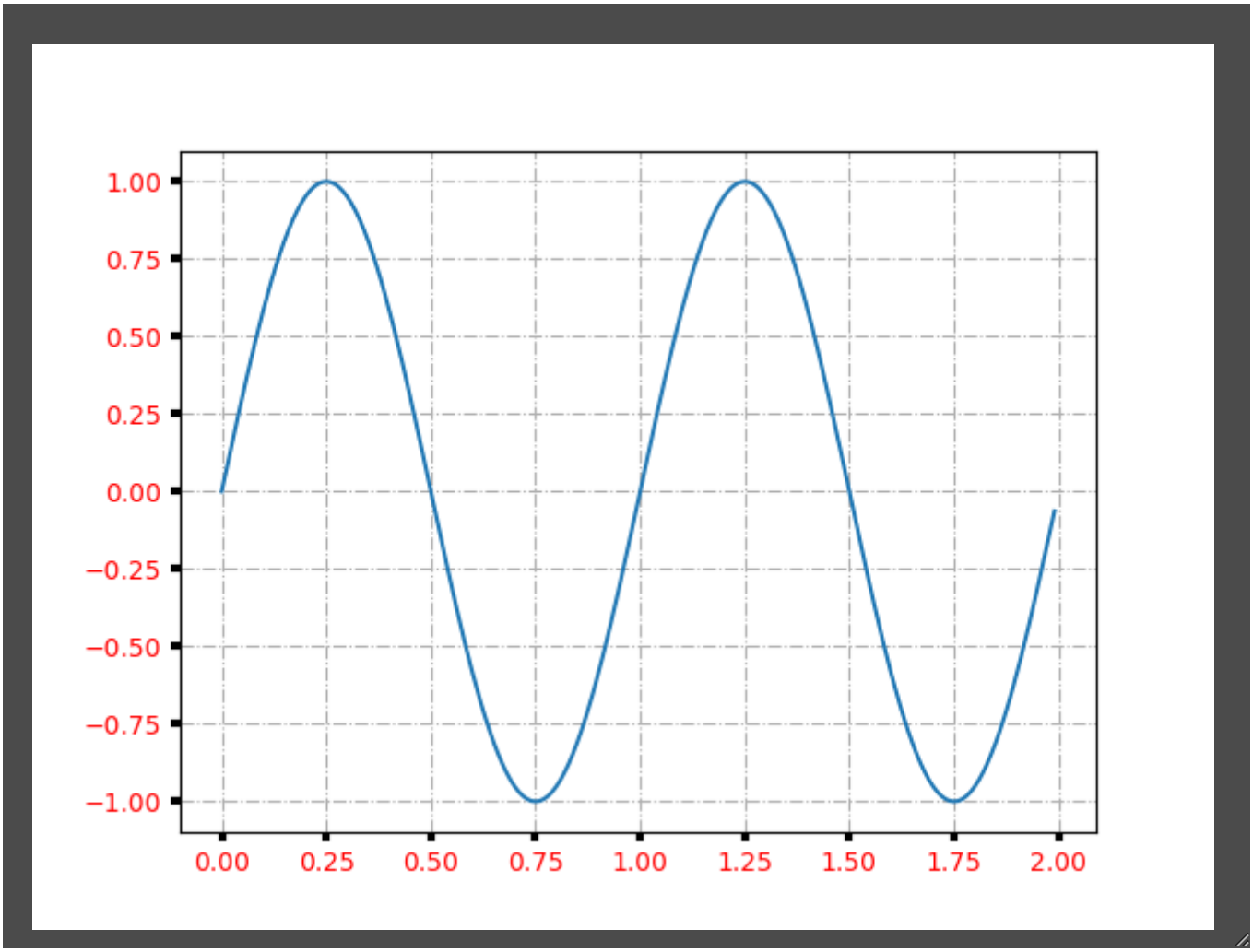
Executable and editable Codes

js based interpreters

PlotSin.py

```
1  import numpy as np
2  import matplotlib.pyplot as plt
3
4  t = np.arange(0.0, 2.0, 0.01)
5  s = np.sin(2 * np.pi * t)
6
7  fig, ax = plt.subplots()
8  ax.plot(t, s)
9
10 ax.grid(True, linestyle='-.')
11 ax.tick_params(labelcolor='r', labelsize='medium', width=3)
12
13 plt.show()
14
15 plot(fig) # <- this is required to plot the fig also on the LiaScript
     canvas
```

```
downloading module => numpy
downloading module => matplotlib
```



More information about the Pyodide plugin are available here

Server based compiling and execution

Program.cs

```
using System;
using System.Collections.Generic;
using System.Collections;
using System.Linq;
using System.Text;

int n;
Console.Write("Number of primes: ");
n = int.Parse(Console.ReadLine());

ArrayList primes = new ArrayList();
primes.Add(2);

for(int i = 3; primes.Count < n; i++) {
  bool isPrime = true;
  foreach(int num in primes) isPrime &= i % num != 0;
  if(isPrime) primes.Add(i);
}

Console.Write("Primes: ");
foreach(int prime in primes) Console.Write($" {prime}");
```

project.csproj

```
<Project Sdk="Microsoft.NET.Sdk">
  <PropertyGroup>
    <OutputType>Exe</OutputType>
    <TargetFramework>net5.0</TargetFramework>
  </PropertyGroup>
</Project>
```

```
Number of primes:
```

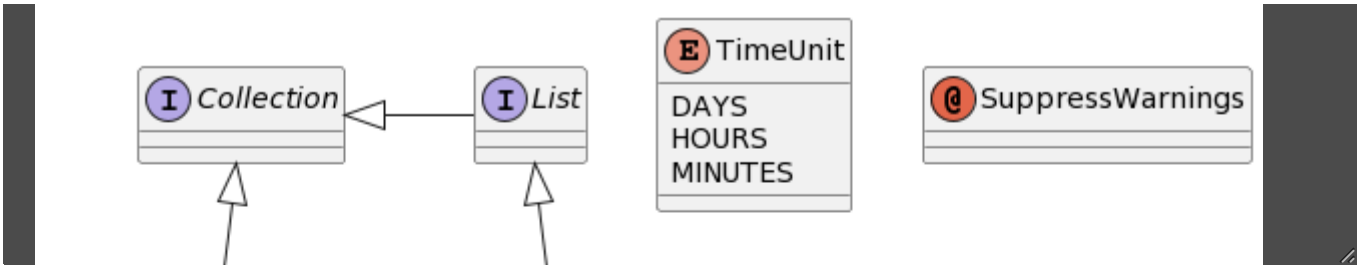
More information about the Coderunner plugin are available here

Diagrams and Schemas

Software development

PlantUML.txt

```
@startuml

abstract class AbstractList
abstract AbstractCollection
interface List
interface Collection

List <|-- AbstractList
Collection <|-- AbstractCollection

Collection <|- List
AbstractCollection <|- AbstractList
AbstractList <|-- ArrayList

class ArrayList {
  Object[] elementData
  size()
}

enum TimeUnit {
  DAYS
  HOURS
  MINUTES
}

annotation SuppressWarnings

@enduml
```



More information about this plugin are available here

Chemistry

																	2	He Helium 4.0026022
												10	Ne Neon 20.17976	18	Ar Argon 39.9481	36	Kr Krypton 83.7982	54	Xe Xenon 131.2936	86	Rn Radon 222	118	Og Oganesson 294
						9	F Fluorine 18.9984031636	17	Cl Chlorine 35.45	35	Br Bromine 79.904	53	I Iodine 126.904473	85	At Astatine 210	117	Ts Tennessine 294
						8	O Oxygen 15.999	16	S Sulfur 32.06	34	Se Selenium 78.9718	52	Te Tellurium 127.603	84	Po Polonium 209	116	Lv Livermorium 293
						7	N Nitrogen 14.007	15	P Phosphorus 30.9737619985	33	As Arsenic 74.9215956	51	Sb Antimony 121.7601	83	Bi Bismuth 208.980401	115	Mc Moscovium 289
						6	C Carbon 12.011	14	Si Silicon 28.085	32	Ge Germanium 72.6308	50	Sn Tin 118.7107	82	Pb Lead 207.21	114	Fl Flerovium 289
						5	B Boron 10.81	13	Al Aluminium 26.98153857	31	Ga Gallium 69.7231	49	In Indium 114.8181	81	Tl Thallium 204.38	113	Nh Nihonium 286
										30	Zn Zinc 65.382	48	Cd Cadmium 112.4144	80	Hg Mercury 200.5923	112	Cn Copernicium 285
										29	Cu Copper 63.5463	47	Ag Silver 107.86822	79	Au Gold 196.9665695	111	Rg Roentgenium 282
										28	Ni Nickel 58.69344	46	Pd Palladium 106.421	78	Pt Platinum 195.0849	110	Ds Darmstadtium 281

71	Lu Lutetium 174.96681	103	Lr Lawrencium 266
70	Yb Ytterbium 173.0451	102	No Nobelium 259
69	Tm Thulium 168.934222	101	Md Mendelevium 258
68	Er Erbium 167.2593	100	Fm Fermium 257
67	Ho Holmium 164.930332	99	Es Einsteinium 252
66	Dy Dysprosium 162.5001	98	Cf Californium 251
65	Tb Terbium 158.925352	97	Bk Berkelium 247
64	Gd Gadolinium 157.253	96	Cm Curium 247

Category key:

- Diatomic Nonmetal
- Noble Gas
- Alkali Metal
- Alkaline Earth Metal

Simulations

Embedded Systems

Run an Arduino example by clicking the button below the code. Adapt the content for changing the light pattern.

Simulation time: 00:29.406

ExtendedHelloWorld.cpp

```
byte leds[] = {13, 12, 11, 10};
void setup() {
  Serial.begin(115200);
  for (byte i = 0; i < sizeof(leds); i++) {
    pinMode(leds[i], OUTPUT);
  }
}

int i = 0;
void loop() {
  Serial.print("LED: ");
  Serial.println(i);
  digitalWrite(leds[i], HIGH);
  delay(250);
  digitalWrite(leds[i], LOW);
  i = (i + 1) % sizeof(leds);
}
```

```
LED: 3
LED: 0
LED: 1
LED: 2
LED: 3
LED: 0
LED: 1
LED: 2
LED: 3
LED: 0
LED: 1
LED: 2
LED: 3
LED: 0
LED: 1
LED: 2
LED: 3
LED: 0
LED: 1
```

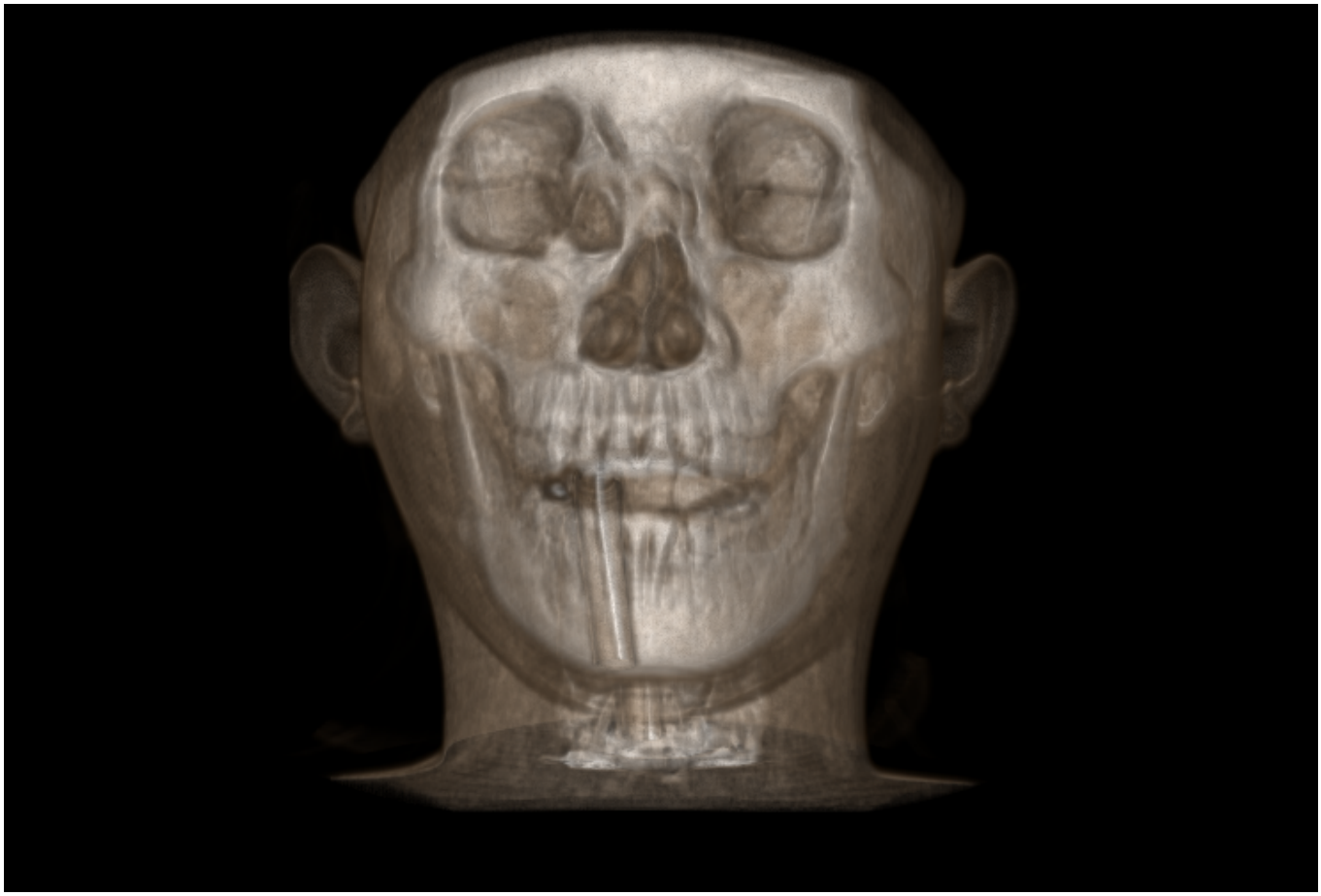
```
LED: 2

LED: 3
LED: 0
LED: 1
LED: 2
LED: 3
LED: 0
LED: 1
LED: 2
LED: 3
LED: 0
LED: 1
LED: 2
LED: 3
LED: 0
LED: 1
LED: 2
```

> More information about the AVR8js plugin are available here

Visualization

> **Note:** This might take a while, to load and render the vti data set within the browser.

Examine the 3D object by mouse movements and clicks.



More information about the VTK plugin are available here