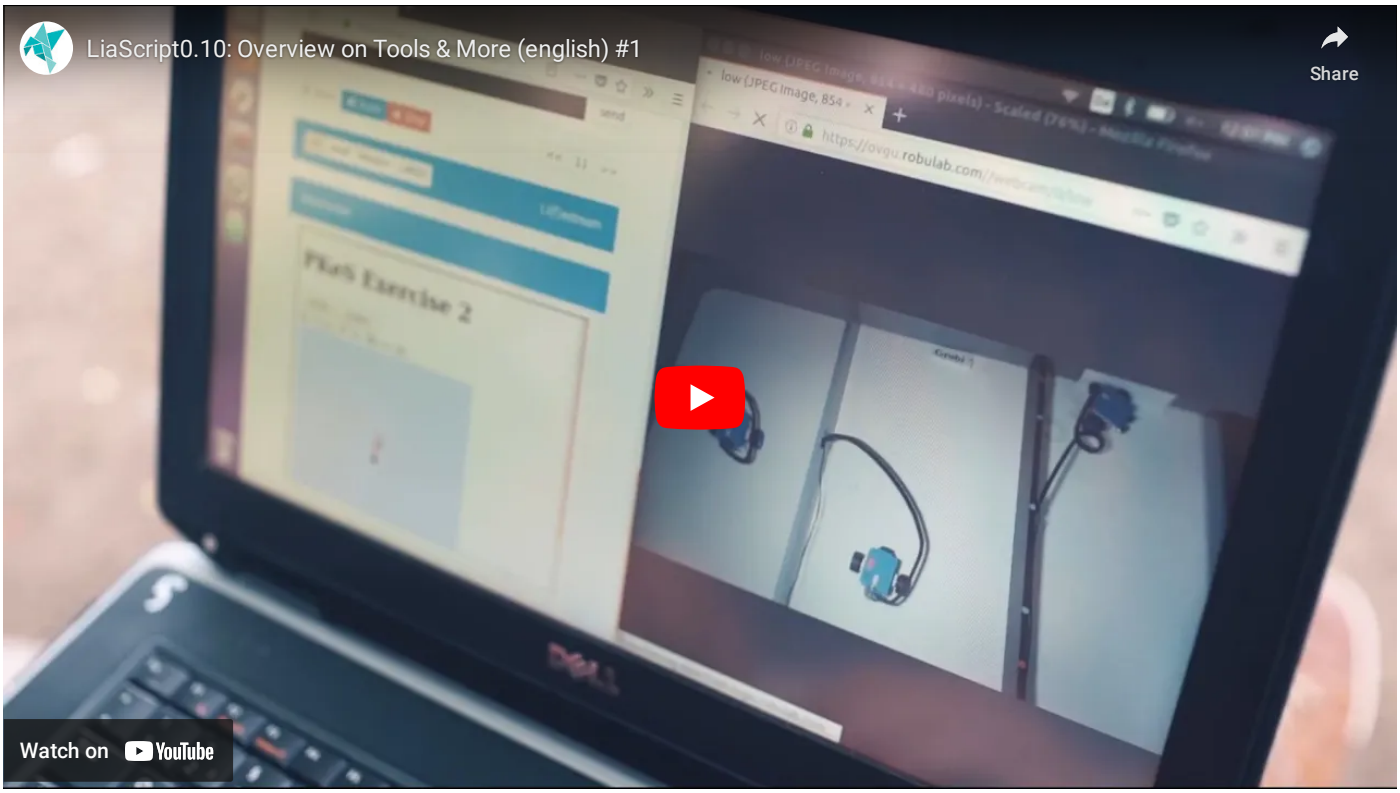
Example Course

This course illustrates the export of LiaScript based learning content. 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

```
import numpy as np
import matplotlib.pyplot as plt

t = np.arange(0.0, 2.0, 0.01)
s = np.sin(2 * np.pi * t)

fig, ax = plt.subplots()
ax.plot(t, s)

ax.grid(True, linestyle='-.')
ax.tick_params(labelcolor='r', labelsize='medium', width=3)

plt.show()

plot(fig) # <- this is required to plot the fig also on the LiaScript
  canvas
```

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>
```

```
CodeRunner is not defined
```

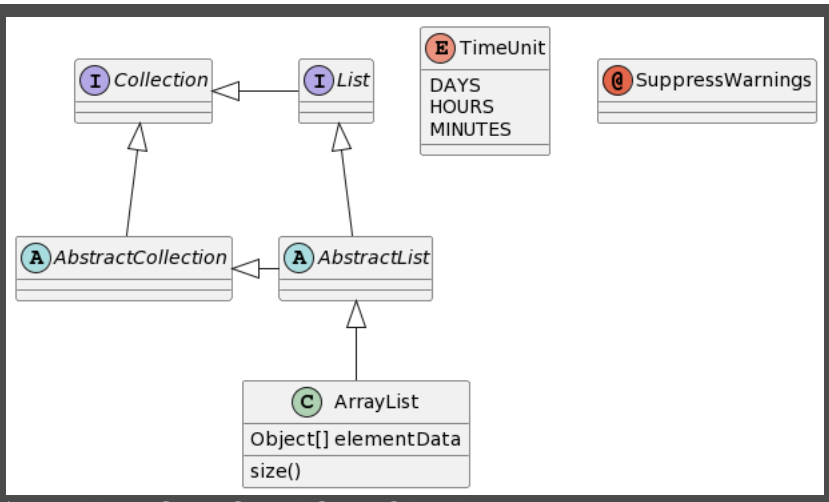
More information about the Coderunner plugin are available here

Diagrams and Schemas

Software development

PlantUML.txt

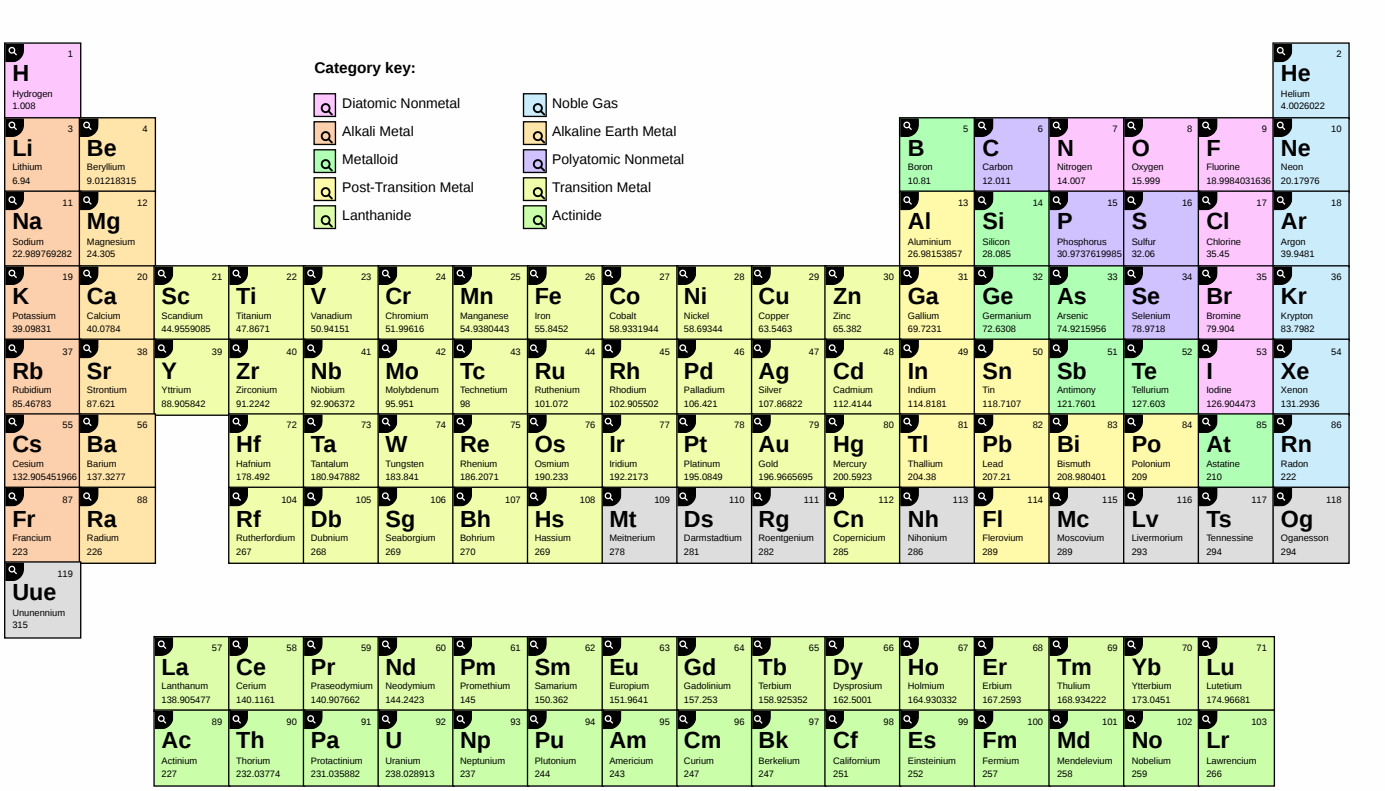
```
@startuml

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
```



https://www.plantuml.com/plantuml/png/LO-
_JWCn38TtFuL76Fe63Aqe4aX09QudX1236mmAIdnLx0pyuTtffLH99ik_xtCSBzKeMOu1W7PgYPoX2wIAg__srgjLTaelfn3OcPy4l1YdDtACHQrjuy
0s8czq7Etj-GGuSMMnDHeTO_HUVdSCl04kEkFMHH_77aVNgQJYKwytuCDUxc_jnUpNCBebCHkLdGzxl4wi-KX8lxmgmP7dDCVm1

More information about this plugin are available here

Chemistry



Simulations

Embedded Systems

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

Simulation time: 00:12.093

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);
}
```

```
Sketch uses 2238 bytes (6%) of program storage space. Maximum is 32256 bytes.
Global variables use 200 bytes (9%) of dynamic memory, leaving 1848 bytes for local variables. Maximum is 2048
bytes.


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
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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
```
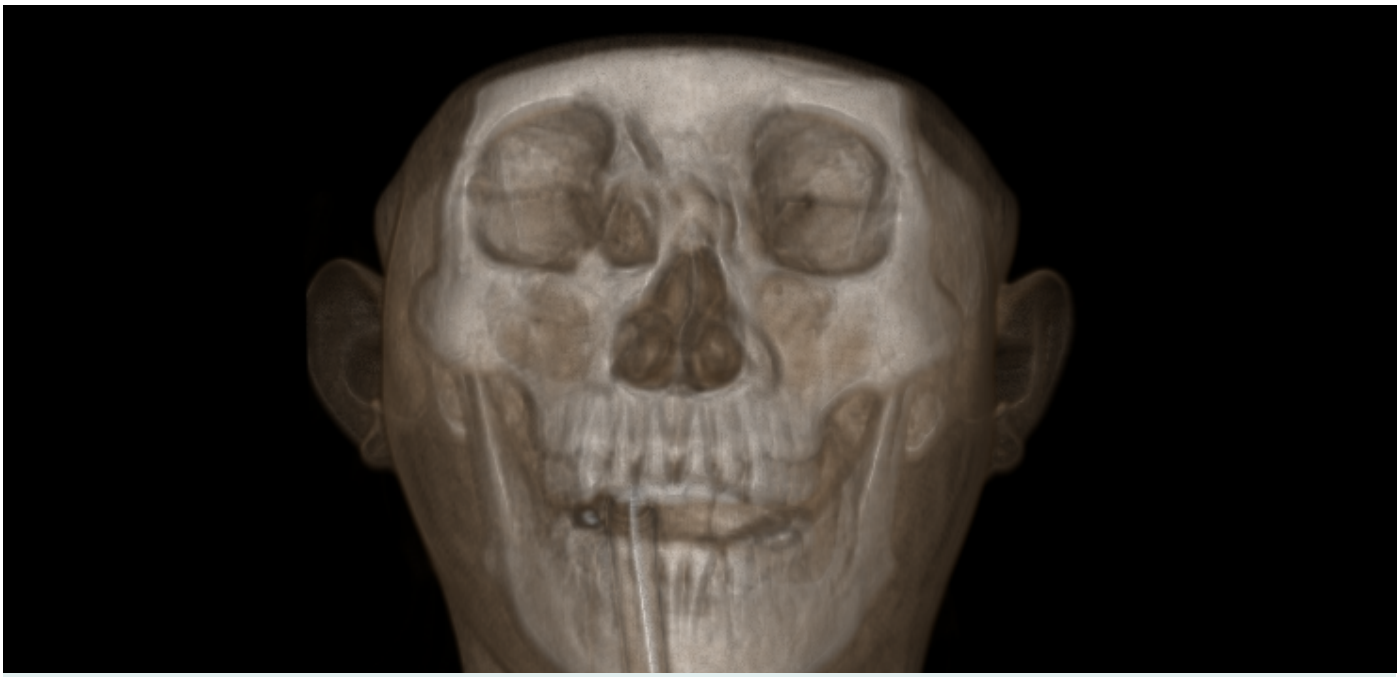

More information about the AVR8js plugin are available here

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