

EJSS App SLS Flow 2: Preparing your Easy JavaScript Simulation to be data analytics enabled.

28 Steps [View most recent version on Tango.us](#) 

Created by

lookang lawrence wee

Creation Date

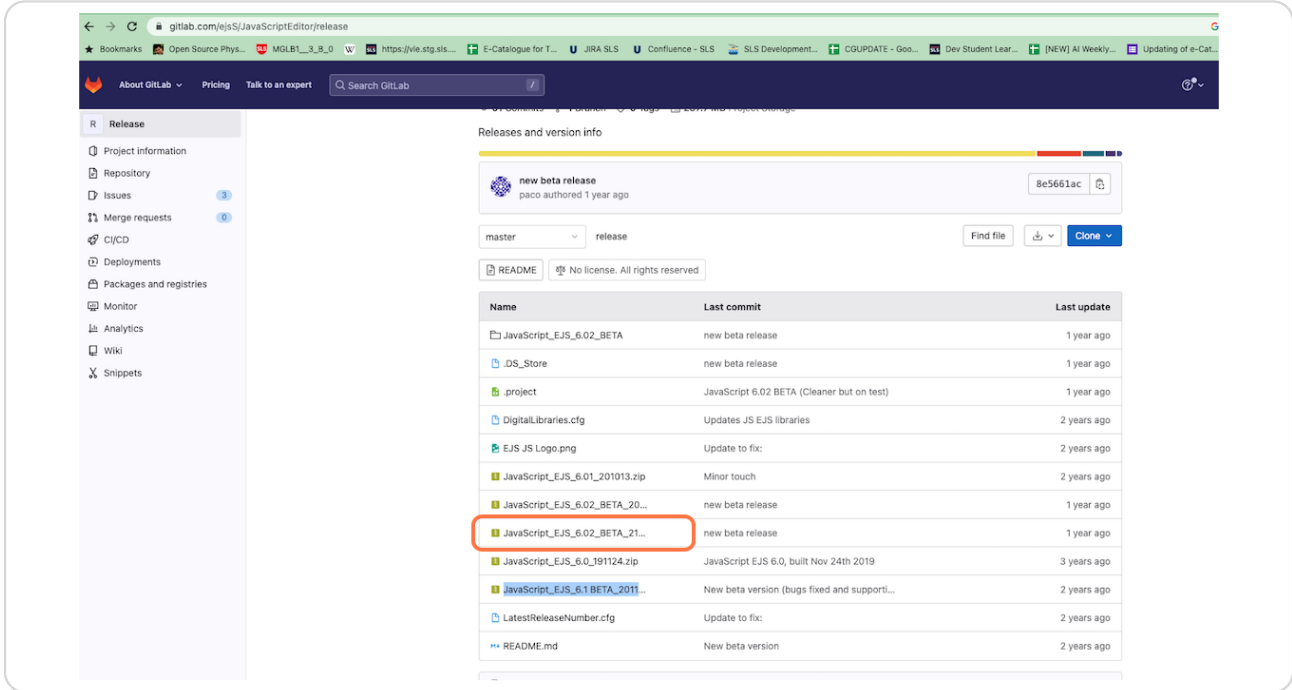
October 5, 2023

Last Updated

October 11, 2023

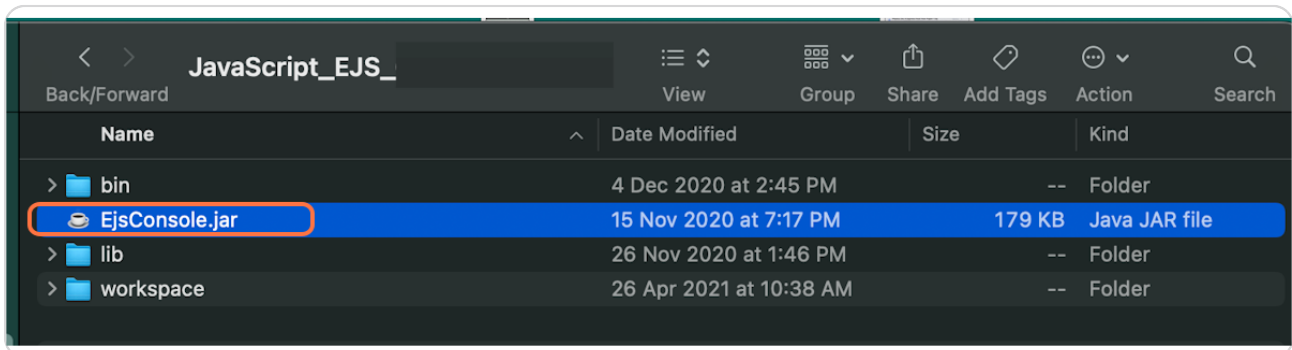
STEP 1

Please follow this link to download JavaScript_EJS_6.02_BETA_201228.zip to a directory of your preference and extract the contents: Download from this link: https://gitlab.com/ejsS/JavaScriptEditor/release/-/blob/master/JavaScript_EJS_6.02_BETA_201228.zip



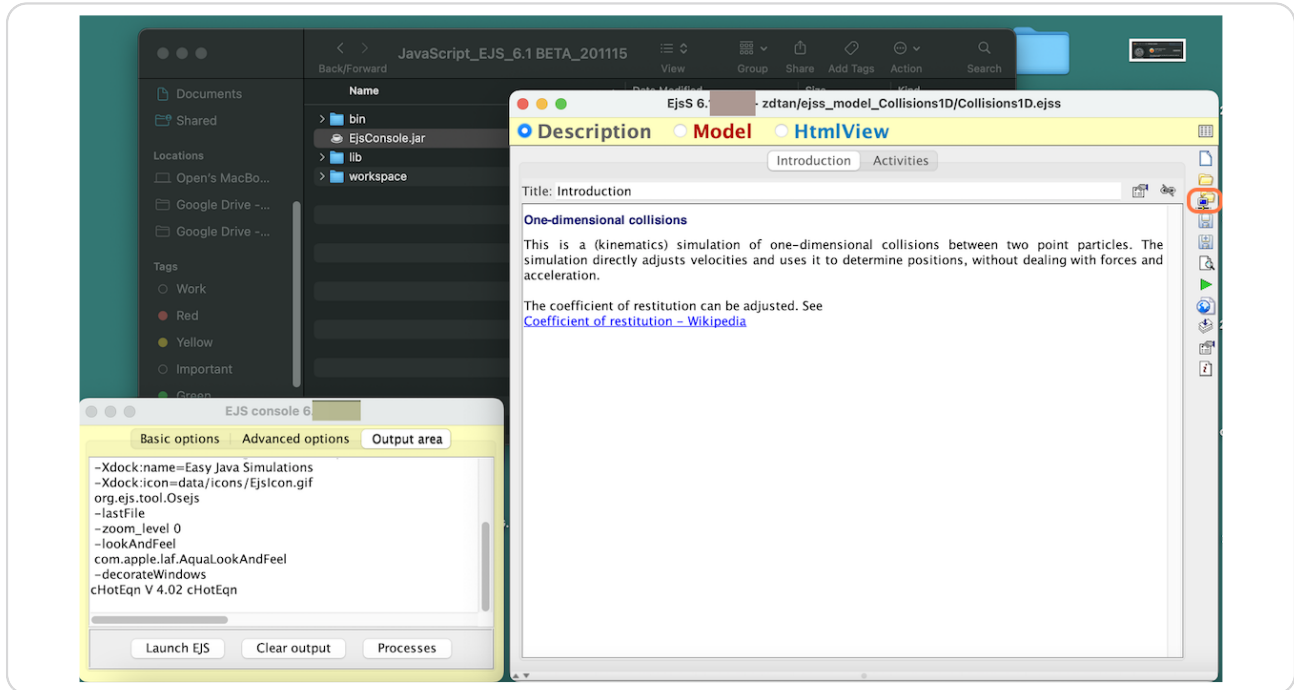
STEP 2

Begin by launching the EJSS authoring toolkit, by simply double clicking on "EjsConsole.jar."



STEP 3

Locate the specific simulation for which you wish to "enable" Moodle data analytics. You can explore the EJSS library by clicking on the fourth icon located in the upper-right corner. After loading it, the screen should look something like this.



STEP 4

Include the QuestionLib into the "Custom" tab by navigating to this GitHub repository: <https://github.com/lookang/codesforejss/blob/master/assessment/questionLib.js> Copy the code starting from "// Assume ECMAScript 6; Chrome >=49,

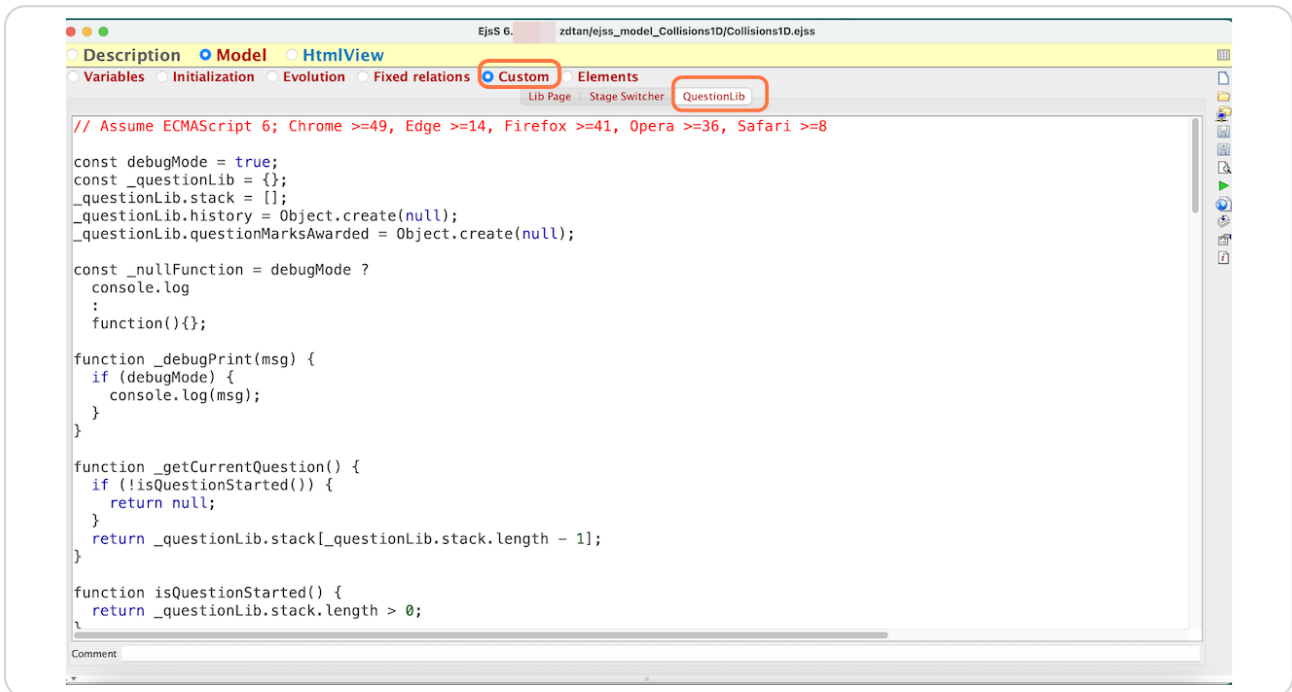
<https://weelookang.blogspot.com/2022/11/questionlibjsmakeassessmentjsonpy.html>

copy

line 106 // Assume ECMAScript 6; Chrome >=49,

all the way down to

line 256 }



```
// Assume ECMAScript 6; Chrome >=49, Edge >=14, Firefox >=41, Opera >=36, Safari >=8

const debugMode = true;
const _questionLib = {};
_questionLib.stack = [];
_questionLib.history = Object.create(null);
_questionLib.questionMarksAwarded = Object.create(null);

const _nullFunction = debugMode ?
  console.log
  :
  function(){};

function _debugPrint(msg) {
  if (debugMode) {
    console.log(msg);
  }
}

function _getCurrentQuestion() {
  if (!isQuestionStarted()) {
    return null;
  }
  return _questionLib.stack[_questionLib.stack.length - 1];
}

function isQuestionStarted() {
  return _questionLib.stack.length > 0;
}
```

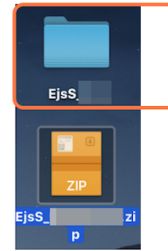
STEP 5

For a step-by-step tutorial on crafting a basic game using EJSS and to understand some of the key concepts on authoring in EJSS toolkit, please visit the following link: <https://iwant2study.org/ospsg/index.php/events/883-20190219-sls-hackathon-etd-cpdd>.

Tutorial 2:

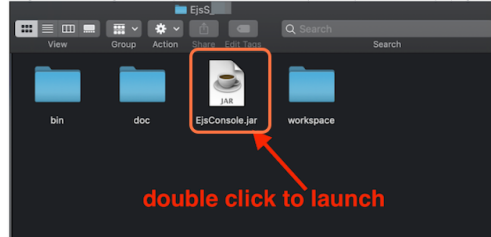
Create a brand new Game Step-by-step EJSS tutorial

1. unzip the downloaded `EjsS_5.3_190422-beta.zip` file into any location easy to find eg. Desktop or D Drive.



updated instructions, old screenshots
use `EjsS_5.3_190422-beta.zip` if possible

2. navigate to the folder eg it is called `EjsS_5.3` and double click the `EjsConsole.jar` to launch the EjsS program

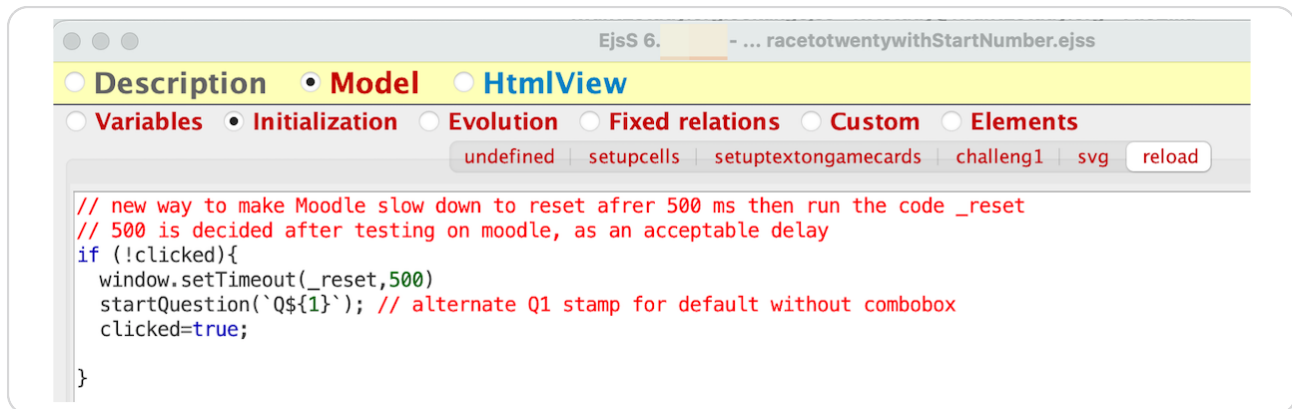


STEP 6

Option 1: (August 8, 2023) incorporate this code into the page's initialization. What it means is If the "clicked" condition is not met, set a window timeout to execute the "_reset" code after a delay of 500 milliseconds, followed by running the "startQuestion(QS{1})" function.

tab [https://github.com/lookang/codesforejss/blob/master/window.setTimeout\(_reset,100\)](https://github.com/lookang/codesforejss/blob/master/window.setTimeout(_reset,100))

```
if (!clicked){ window.setTimeout(_reset,500); clicked=true;}
```



STEP 7

This will force a _reset() 500ms later once using the variable clicked. In the variable tab, create a variable called "clicked" with no initial values. This way, the Moodle will reset and display everything in place and also startQuestion(`Q\${1}`)



STEP 8

Option 2: for a more in-depth gamification student learning experience where first attempt is full marks say (2), and 1 mark for greater than 2 attempts, 0 for incorrect, use the following sample code as your base code and modify it to suit your context:

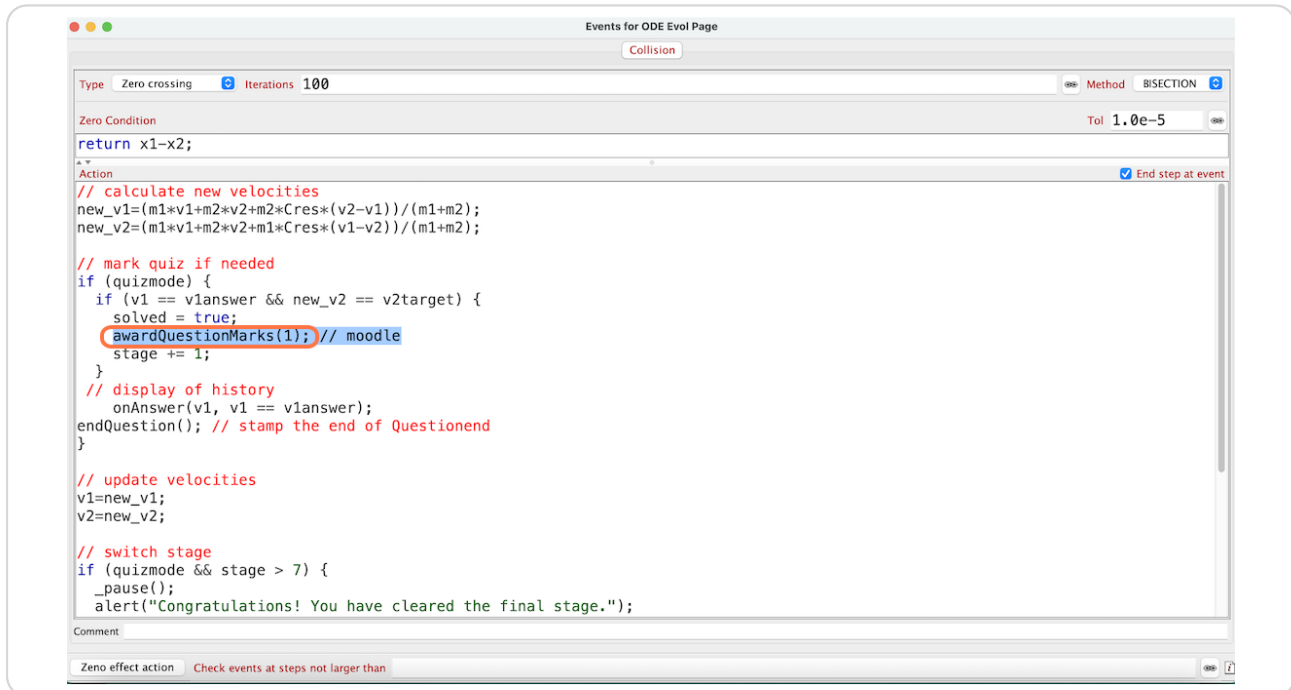
Created with *Tango*

```
// copy start
if (once) {
    addQuestionHistory(`${
        questionNumber
    } = ${
        question
    }`); //moodle part of the history
    once=false
}
onAnswer(coordinates,true)
if (isFirstTry) {
    awardQuestionMarks(2);
    once=true // set back to true to prepare for next q
}
else {
    awardQuestionMarks(1);
    isFirstTry =true //reset
    once=true // set back to true to prepare for next q
}
// copy end
```

Note: Once is a variable to check if user enters this mode one time only. if `isFirstTry` is true `awardQuestionMarks (2)`, else `awardQuestionMarks (1)`

STEP 9

The function of (1) in `awardQuestionMarks(1)` is to determine the number of marks to be awarded. In this example, I add this code into the "Events for ODE Collision Page". Depending on your simulation, the code can be added appropriately to suit your context.



```
Events for ODE Evol Page
Collision

Type Zero crossing Iterations 100 Method BISECTION Tol 1.0e-5

Zero Condition
return x1-x2;

Action
// calculate new velocities
new_v1=(m1*v1+m2*v2+m2*Cres*(v2-v1))/(m1+m2);
new_v2=(m1*v1+m2*v2+m1*Cres*(v1-v2))/(m1+m2);

// mark quiz if needed
if (quizmode) {
  if (v1 == v1answer && new_v2 == v2target) {
    solved = true;
    awardQuestionMarks(1); // moodle
    stage += 1;
  }
}
// display of history
onAnswer(v1, v1 == v1answer);
endQuestion(); // stamp the end of Questionend
}

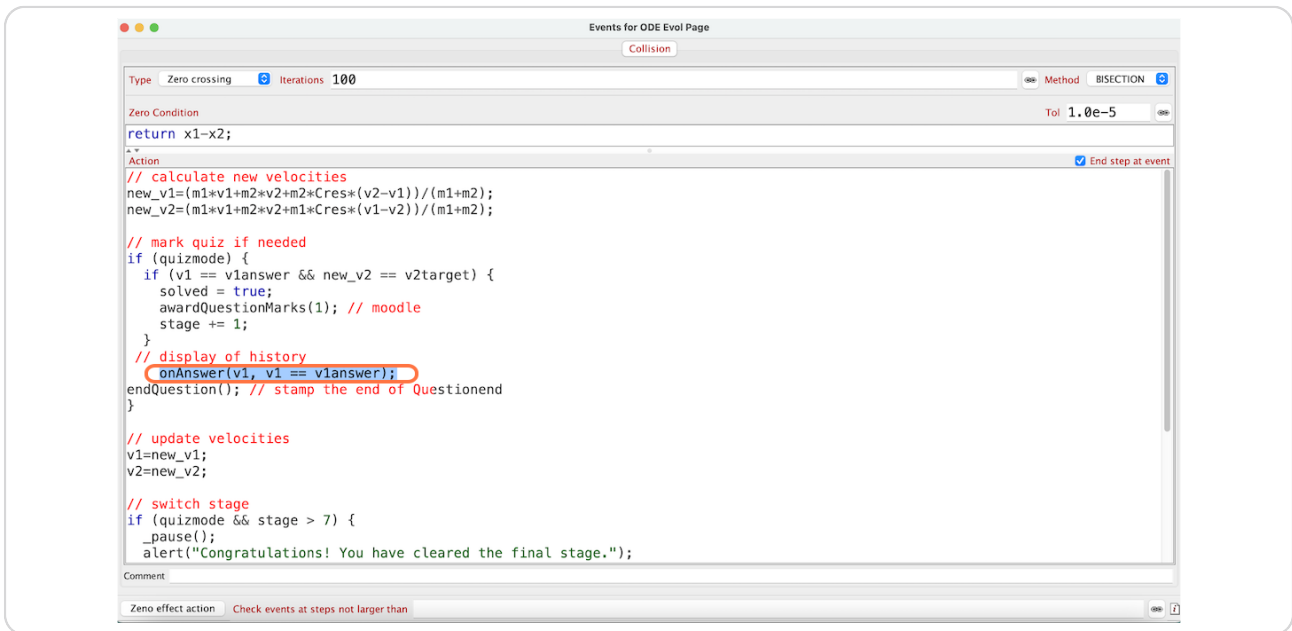
// update velocities
v1=new_v1;
v2=new_v2;

// switch stage
if (quizmode && stage > 7) {
  _pause();
  alert("Congratulations! You have cleared the final stage.");
}

Comment
Zero effect action Check events at steps not larger than
```

STEP 10

The function of `onAnswer(v1, v1 == v1answer)` is to display the history of successful and unsuccessful answers. The first parameter is "answer", the second is "isCorrect". This helps to display the history.



```
Events for ODE Evol Page
Collision

Type Zero crossing Iterations 100 Method BISECTION Tol 1.0e-5
Zero Condition
return x1-x2;
Action
// calculate new velocities
new_v1=(m1*v1+m2*v2+m2*Cres*(v2-v1))/(m1+m2);
new_v2=(m1*v1+m2*v2+m1*Cres*(v1-v2))/(m1+m2);
// mark quiz if needed
if (quizmode) {
    if (v1 == v1answer && new_v2 == v2target) {
        solved = true;
        awardQuestionMarks(1); // moodle
        stage += 1;
    }
}
// display of history
onAnswer(v1, v1 == v1answer);
endQuestion(); // stamp the end of Questionend
}

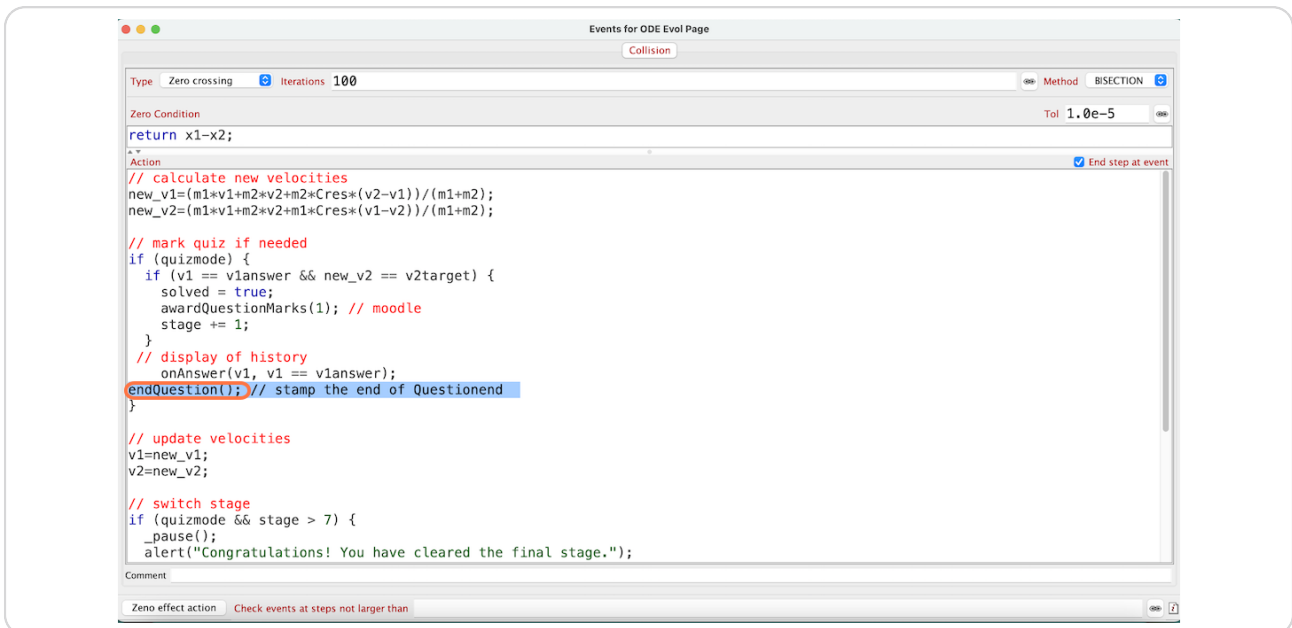
// update velocities
v1=new_v1;
v2=new_v2;

// switch stage
if (quizmode && stage > 7) {
    _pause();
    alert("Congratulations! You have cleared the final stage.");
}

Comment
Zero effect action Check events at steps not larger than
```

STEP 11

The function of `endQuestion()` is to indicate the end of the question.



```
Events for ODE Evol Page
Collision

Type Zero crossing Iterations 100 Method BISECTION Tol 1.0e-5
Zero Condition
return x1-x2;
Action
// calculate new velocities
new_v1=(m1*v1+m2*v2+m2*Cres*(v2-v1))/(m1+m2);
new_v2=(m1*v1+m2*v2+m1*Cres*(v1-v2))/(m1+m2);
// mark quiz if needed
if (quizmode) {
    if (v1 == v1answer && new_v2 == v2target) {
        solved = true;
        awardQuestionMarks(1); // moodle
        stage += 1;
    }
}
// display of history
onAnswer(v1, v1 == v1answer);
endQuestion(); // stamp the end of Questionend
}

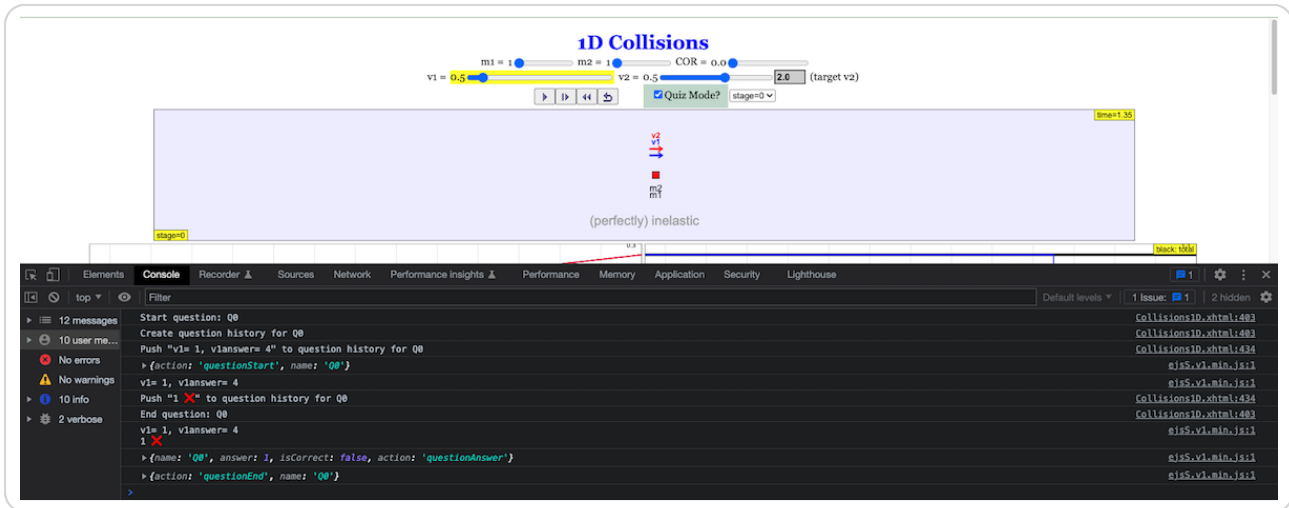
// update velocities
v1=new_v1;
v2=new_v2;

// switch stage
if (quizmode && stage > 7) {
    _pause();
    alert("Congratulations! You have cleared the final stage.");
}

Comment
Zero effect action Check events at steps not larger than
```

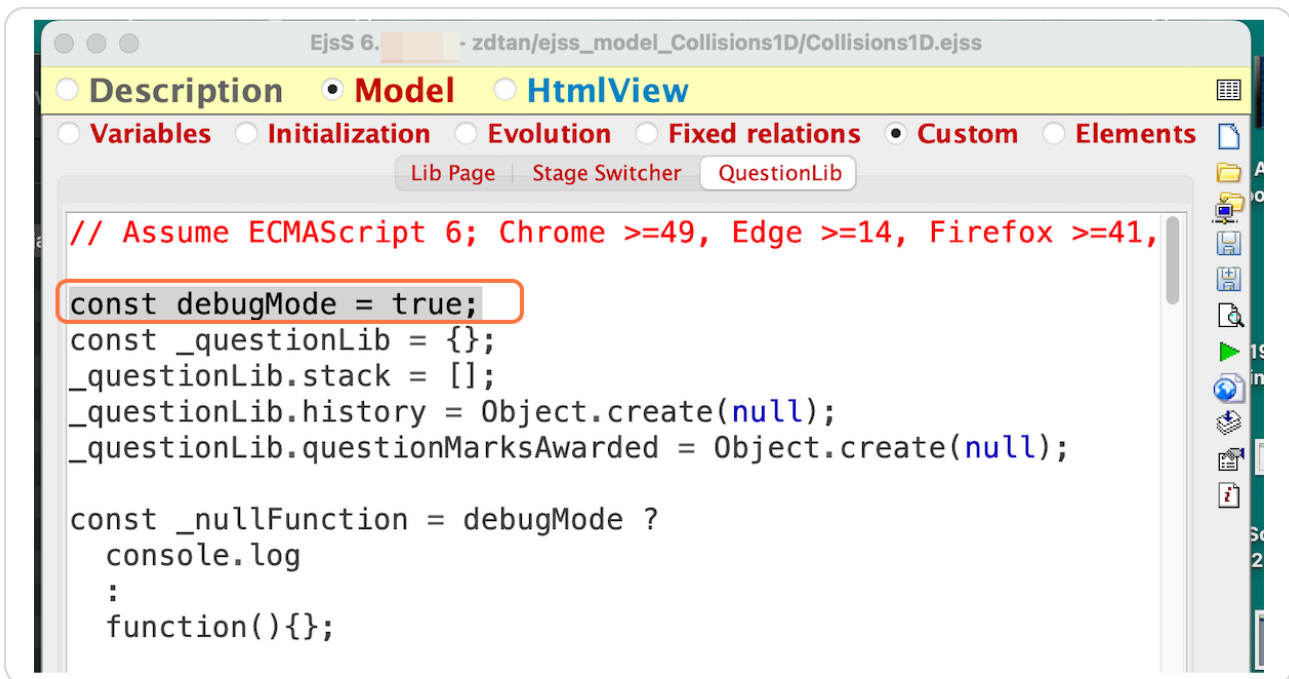
STEP 12

Run the simulation and preview the output on the browser, click Play etc to observe whether the user outputs run successfully.



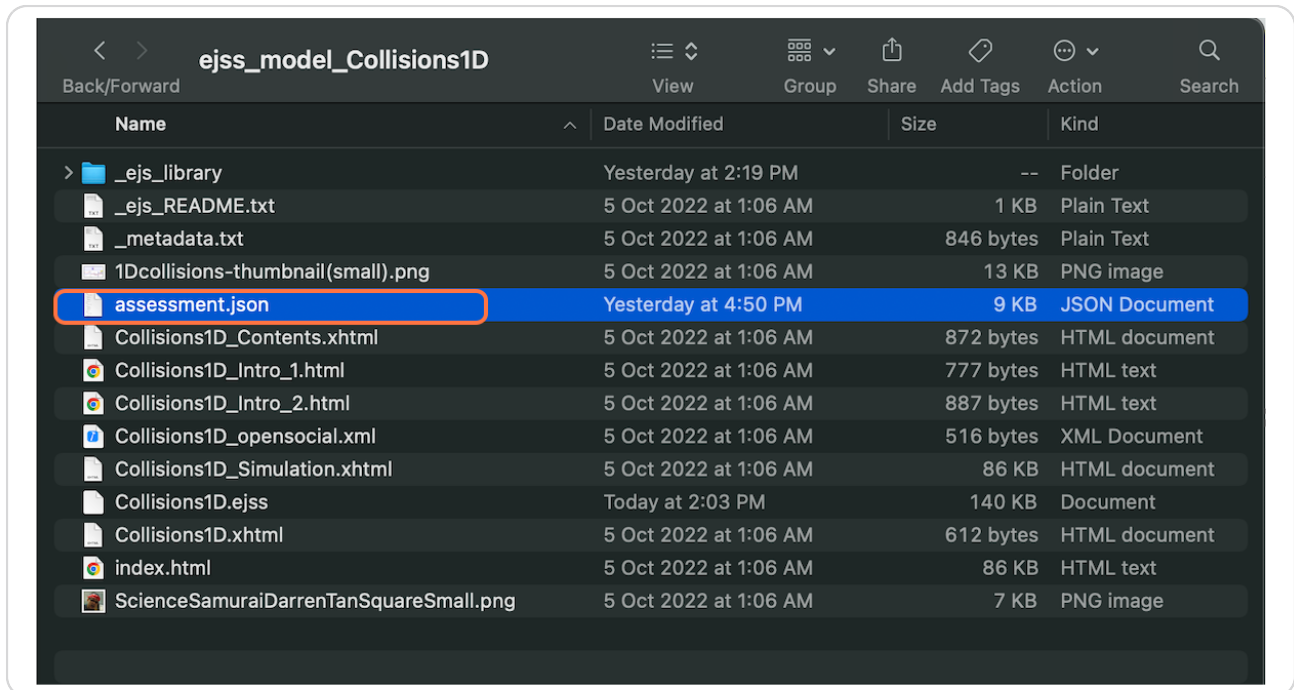
STEP 13

The function of `const debugMode = true` is to allow the Console to be used for debugging purposes. Turn to "true" for debugging, turn to "false" for deploying to production.



STEP 14

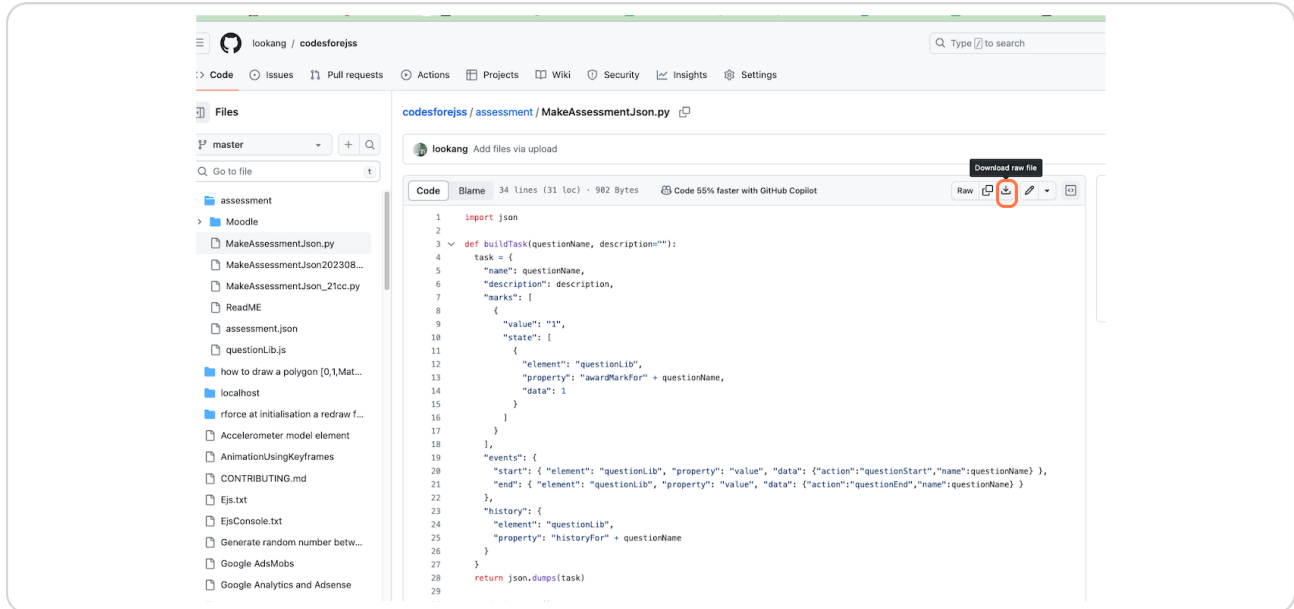
Next prepare the `assessment.json` file by downloading and saving it inside the workspace with the source for this simulation. E.g. `/Users/lookang/Public/workspace/source/zdtan/ejss_model_Collisions1D/`.



STEP 15

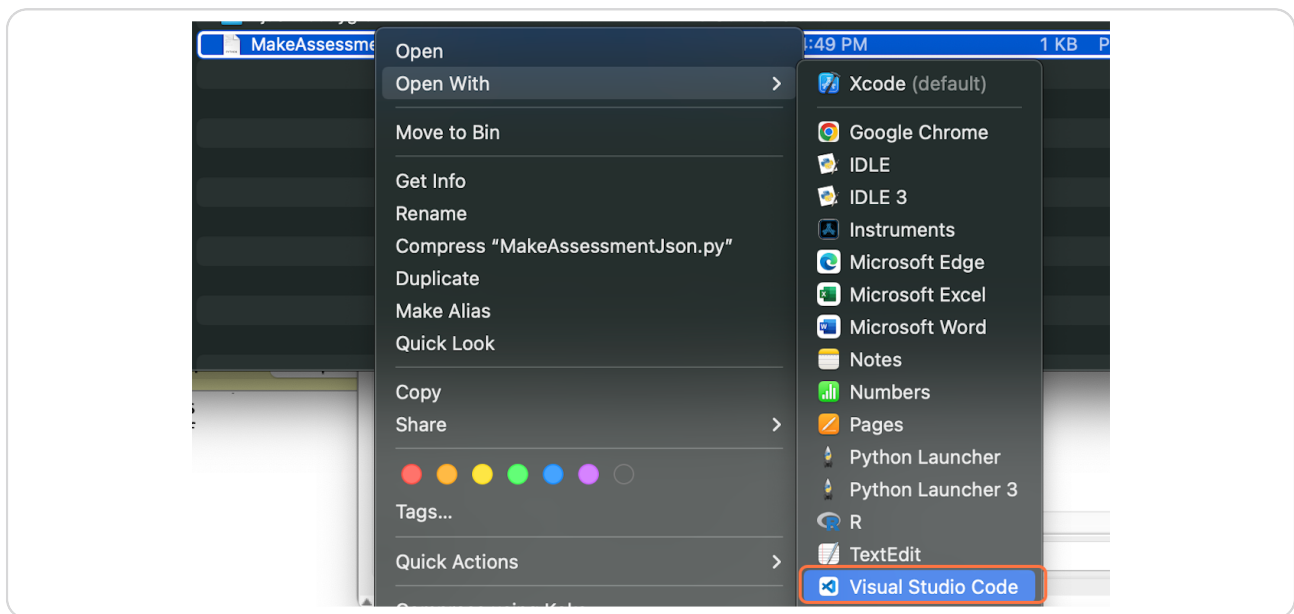
You may download this python file to generate assessment.json automatically.

<https://github.com/lookang/codesforejss/blob/master/assessment/MakeAssessmentJson.py>



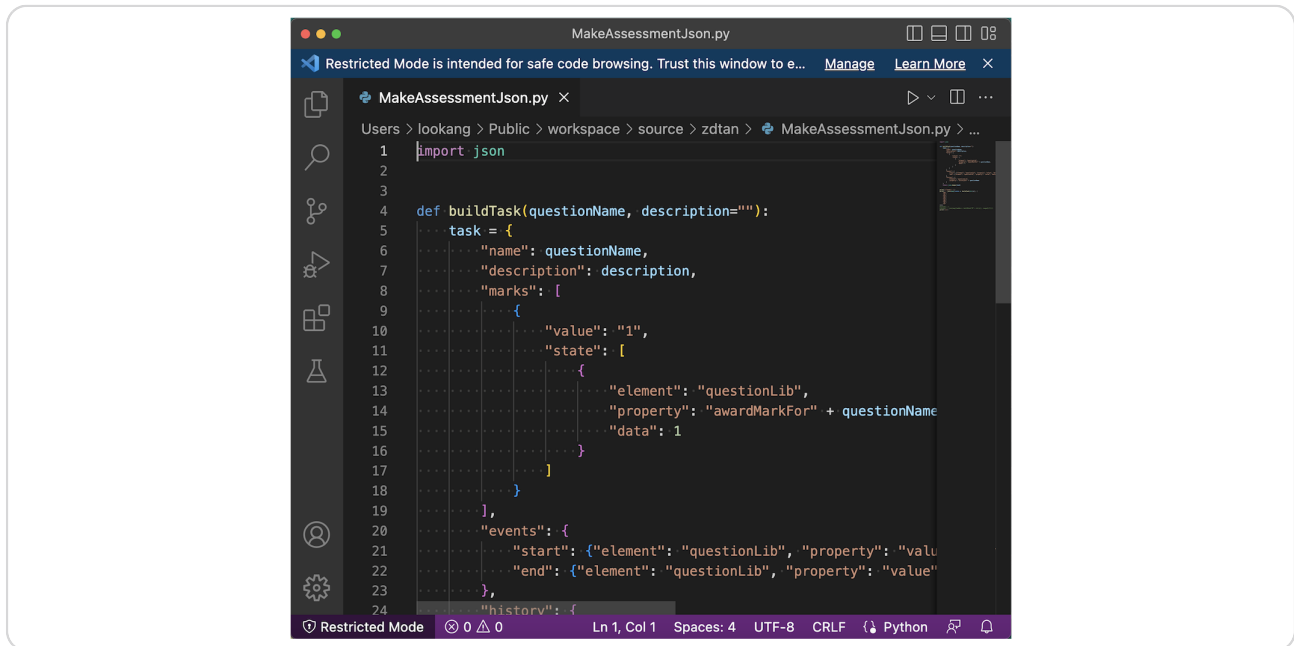
STEP 16

Run the python MakeAssessmentJson.py file using Visual Code Studio.



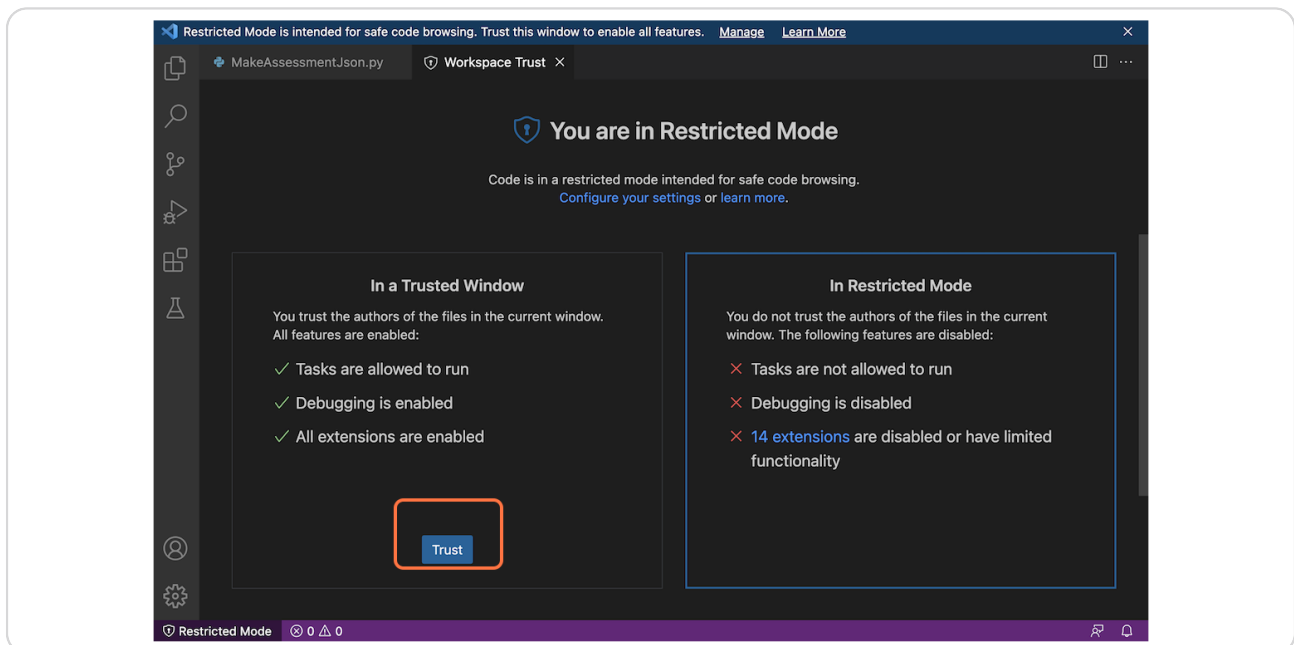
STEP 17

Open the file using Visual Studio Code (VSC). You may download the program if you have not already done so: <https://code.visualstudio.com/>



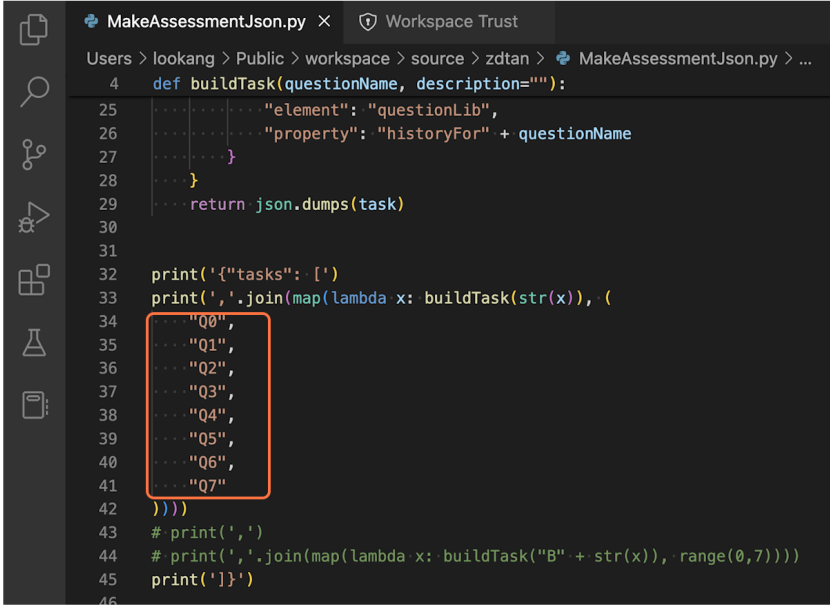
STEP 18

Select Restricted Mode and click Trust if prompted.



STEP 19

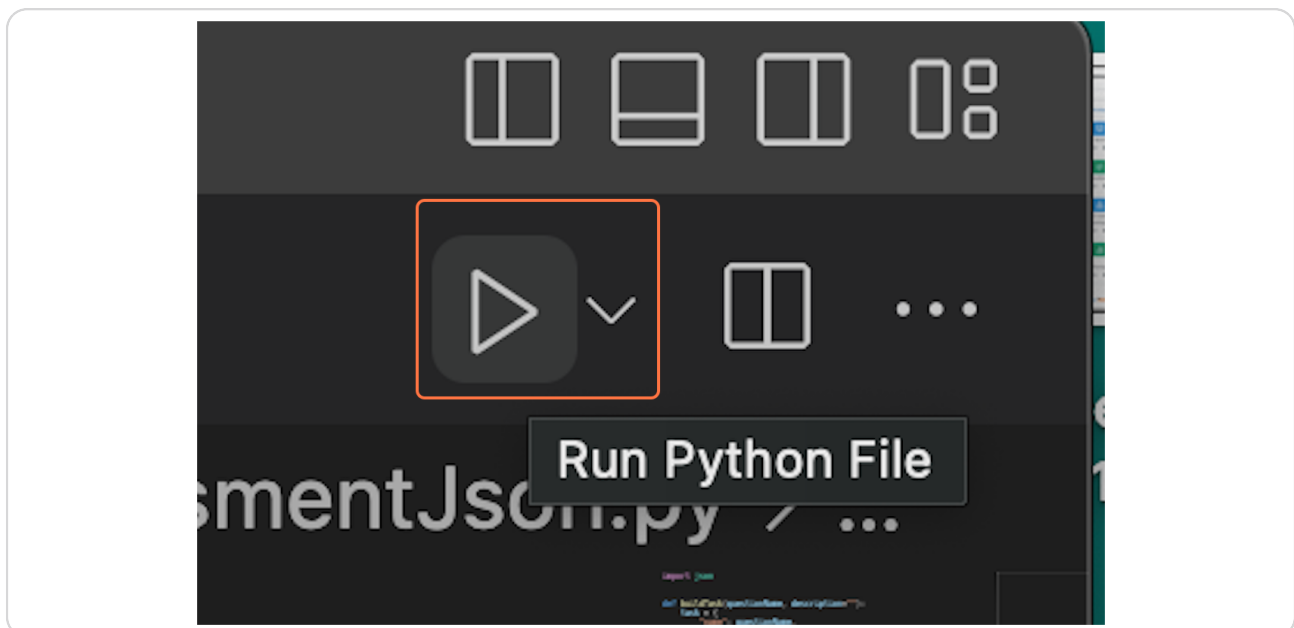
Navigate to line 34 and change the "Q0" etc to as many questions you have designed for. In the example below, there are 7 questions hence the range from Q0 to Q7 to mean the same thing



```
4 def buildTask(questionName, description=""):
25     ... "element": "questionLib",
26     ... "property": "historyFor" + questionName
27     ... }
28     ... }
29     return json.dumps(task)
30
31
32 print('{"tasks": [')
33 print(', '.join(map(lambda x: buildTask(str(x)), (
34     "Q0",
35     "Q1",
36     "Q2",
37     "Q3",
38     "Q4",
39     "Q5",
40     "Q6",
41     "Q7"
42     )))
43 # print(',')
44 # print(', '.join(map(lambda x: buildTask("B" + str(x)), range(0,7))))
45 print(']})')
46
```

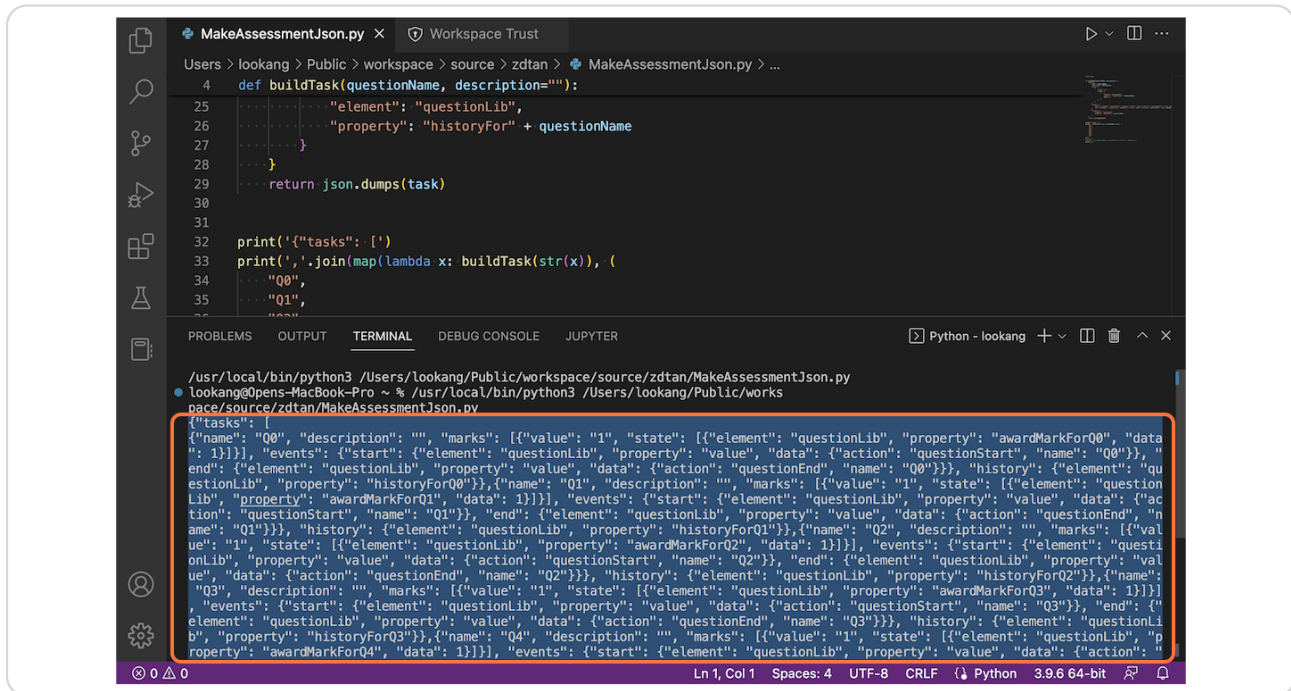
STEP 20

Click on the run Python File button



STEP 21

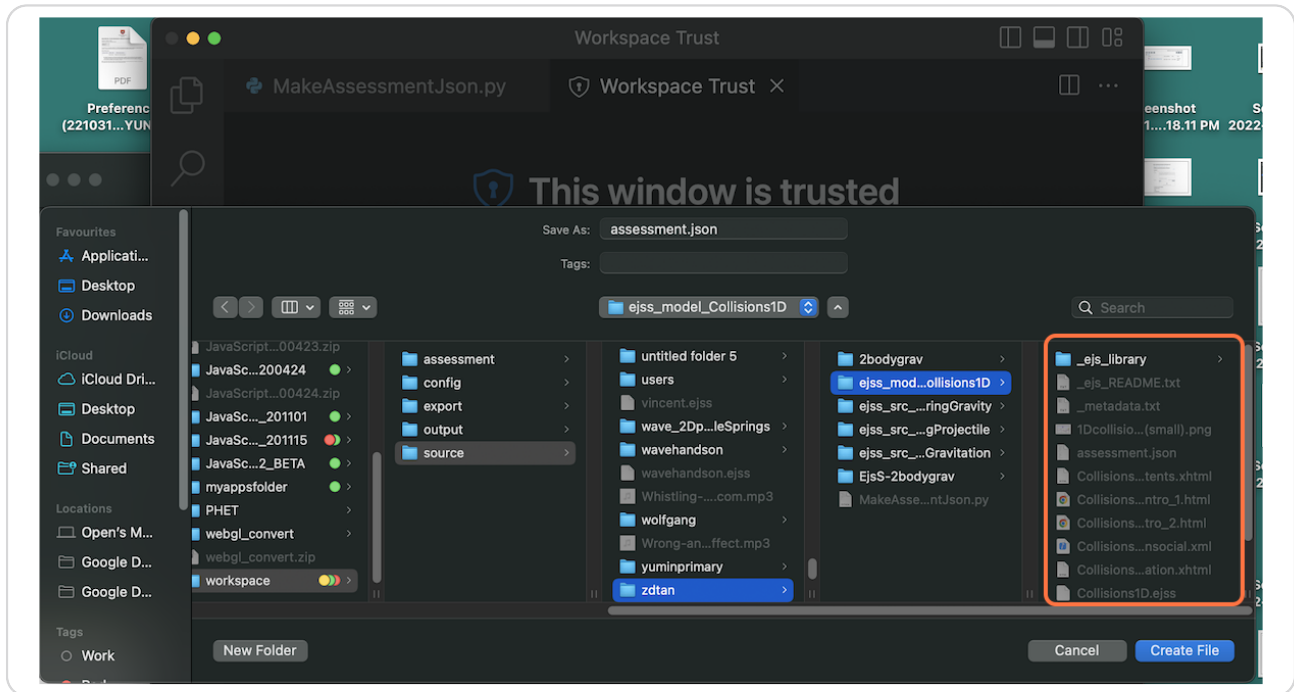
Under the Terminal tab, select and copy the code starting from `{"tasks"`} until the end.



```
MakeAssessmentJson.py X Workspace Trust
Users > lookang > Public > workspace > source > zdtan > MakeAssessmentJson.py > ...
4 def buildTask(questionName, description=""):
25     ...
26     ...
27     ...
28     ...
29     return json.dumps(task)
30
31
32 print({'tasks': []})
33 print(''.join(map(lambda x: buildTask(str(x)), (
34     "Q0",
35     "Q1",
36     "Q2",
37     "Q3",
38     "Q4"
39 )))
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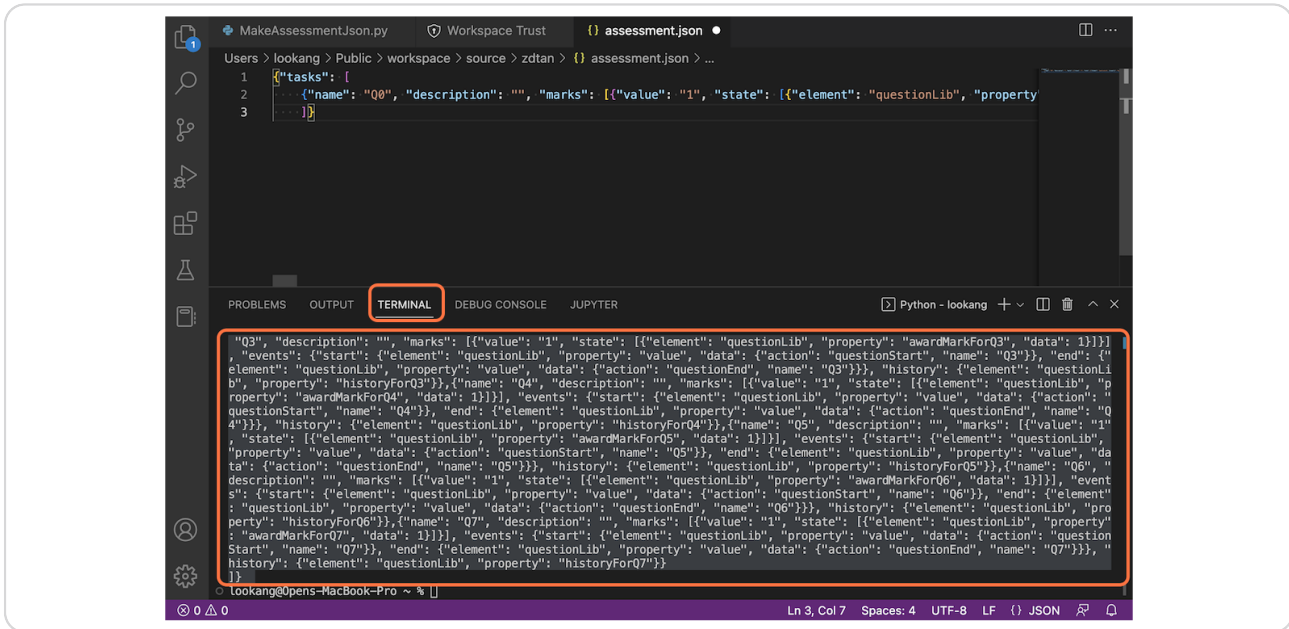
STEP 22

Open a new file and paste the code, then save as new file using the "Save As" option and rename it as "assessment.json." Ensure that this file is placed within the root directory of the EJSS source folder, just like the original "*.ejss" file.



STEP 23

And paste the output of the terminal into this new file with filename `assessment.json`.

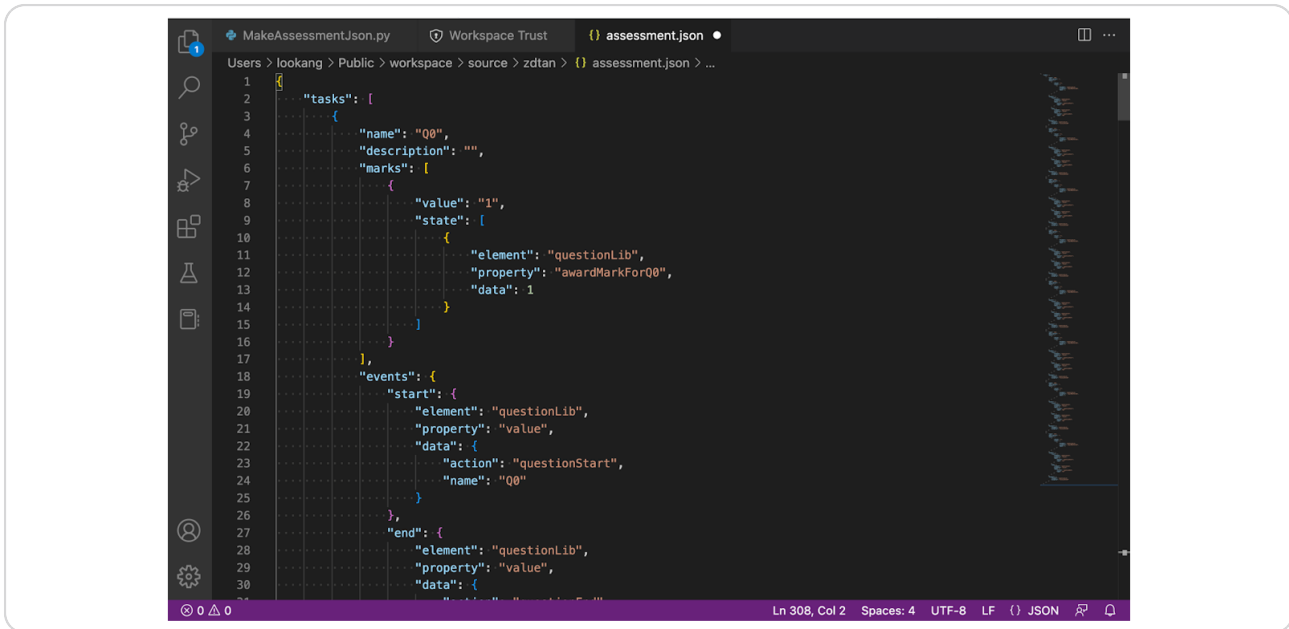


The screenshot shows a code editor with a file named `assessment.json` open. The terminal window at the bottom displays the following JSON output:

```
["03", "description": "", "marks": [{"value": "1", "state": [{"element": "questionLib", "property": "awardMarkFor03", "data": 1}]}], "events": {"start": {"element": "questionLib", "property": "value", "data": {"action": "questionStart", "name": "03"}}, "end": {"element": "questionLib", "property": "value", "data": {"action": "questionEnd", "name": "03"}}, "history": {"element": "questionLib", "property": "historyFor03"}, {"name": "04", "description": "", "marks": [{"value": "1", "state": [{"element": "questionLib", "property": "awardMarkFor04", "data": 1}]}], "events": {"start": {"element": "questionLib", "property": "value", "data": {"action": "questionStart", "name": "04"}}, "end": {"element": "questionLib", "property": "value", "data": {"action": "questionEnd", "name": "04"}}, "history": {"element": "questionLib", "property": "historyFor04"}, {"name": "05", "description": "", "marks": [{"value": "1", "state": [{"element": "questionLib", "property": "awardMarkFor05", "data": 1}]}], "events": {"start": {"element": "questionLib", "property": "value", "data": {"action": "questionStart", "name": "05"}}, "end": {"element": "questionLib", "property": "value", "data": {"action": "questionEnd", "name": "05"}}, "history": {"element": "questionLib", "property": "historyFor05"}, {"name": "06", "description": "", "marks": [{"value": "1", "state": [{"element": "questionLib", "property": "awardMarkFor06", "data": 1}]}], "events": {"start": {"element": "questionLib", "property": "value", "data": {"action": "questionStart", "name": "06"}}, "end": {"element": "questionLib", "property": "value", "data": {"action": "questionEnd", "name": "06"}}, "history": {"element": "questionLib", "property": "historyFor06"}, {"name": "07", "description": "", "marks": [{"value": "1", "state": [{"element": "questionLib", "property": "awardMarkFor07", "data": 1}]}], "events": {"start": {"element": "questionLib", "property": "value", "data": {"action": "questionStart", "name": "07"}}, "end": {"element": "questionLib", "property": "value", "data": {"action": "questionEnd", "name": "07"}}, "history": {"element": "questionLib", "property": "historyFor07"}}
```

STEP 24

To format the code, press the keys "[SHIFT][OPTION][f]" for Mac Users or "[SHIFT][ALT][f]" for Windows Users.



The screenshot shows the same code editor with the `assessment.json` file. The JSON code is now formatted with consistent indentation, making it much easier to read. The structure is as follows:

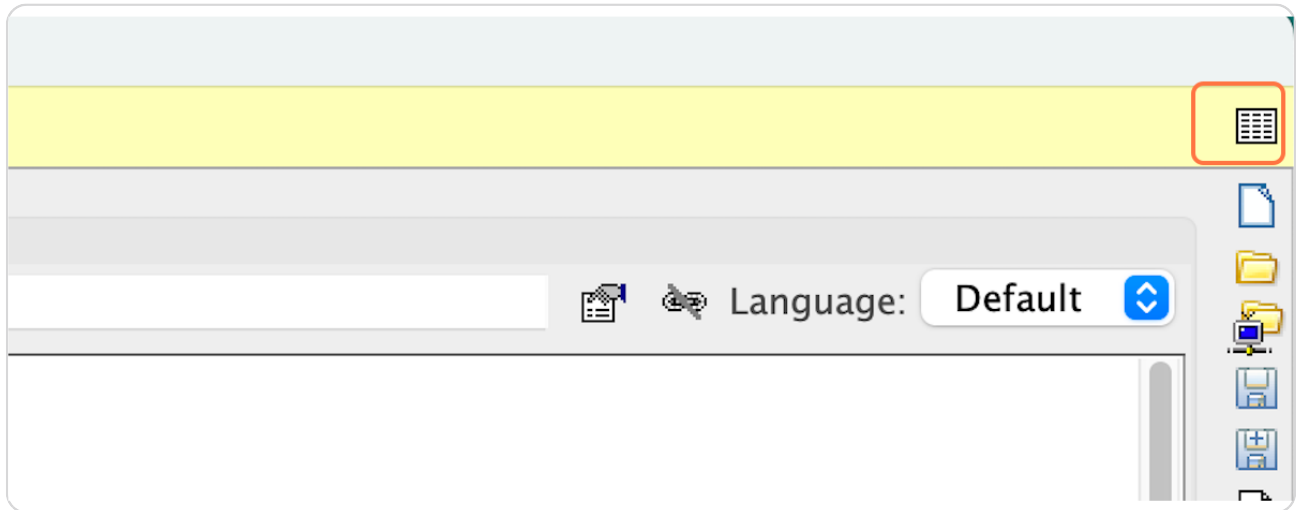
```
1 [{"tasks": [
2   {
3     "name": "Q0", "description": "", "marks": [
4       {
5         "value": "1",
6         "state": [
7           {
8             "element": "questionLib",
9             "property": "awardMarkFor00",
10            "data": 1
11          }
12        ]
13      }
14    ]
15  },
16  ],
17  "events": {
18    "start": {
19      "element": "questionLib",
20      "property": "value",
21      "data": {
22        "action": "questionStart",
23        "name": "Q0"
24      }
25    },
26    "end": {
27      "element": "questionLib",
28      "property": "value",
29      "data": {
30        "action": "questionEnd",
31        "name": "Q0"
32      }
33    }
34  },
35  "history": {"element": "questionLib", "property": "historyFor00"}
36  }
37 ]}]
```

STEP 25

Then, save the file by pressing [COMMAND]+[s] for Mac Users, or [CONTROL]+[s] for Windows users.

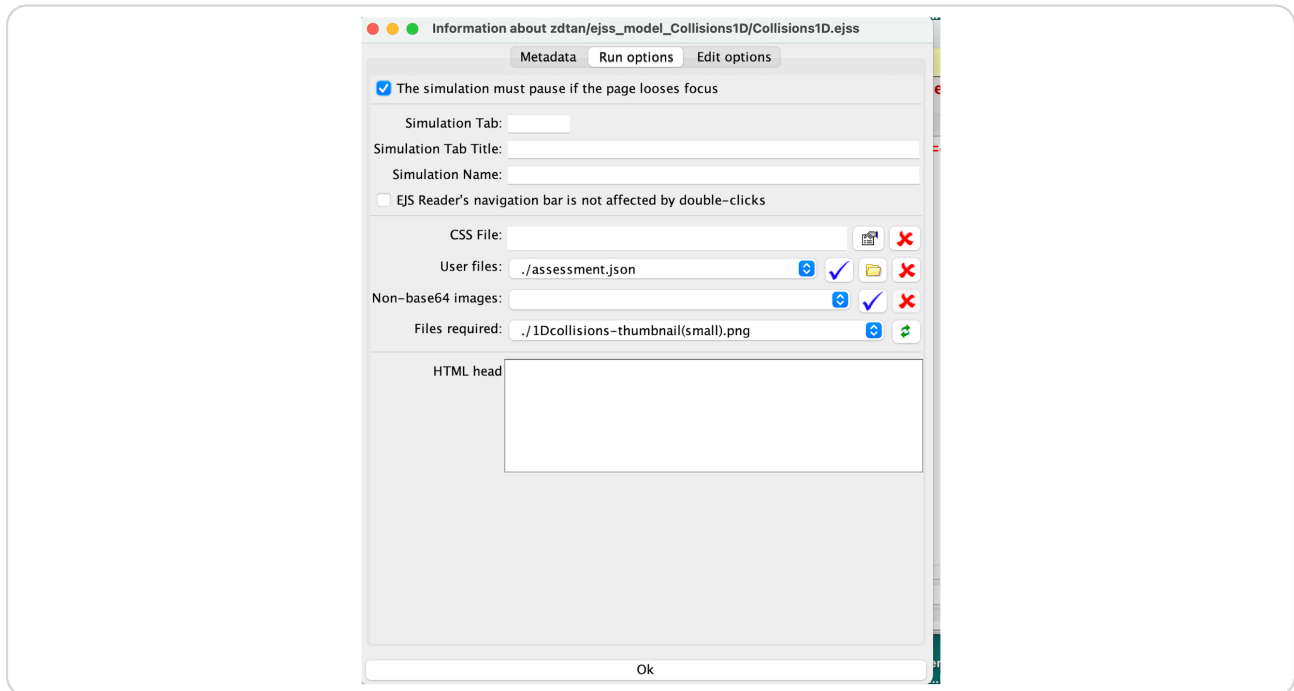
STEP 26

Add the assessment.json file into 'Information about' (top right corner icon), then click the 'Run options' tab.



STEP 27

In the User files field, select `./assessment.json`. This allows future `assessment.json` model deployment to be zipped in the source files.



STEP 28

Export the file as model and email the link to the file to Wee_Loo_Kang@moe.edu.sg or Lawrence_WEE@moe.gov.sg for him to upload. He will email you in 5 working days to inform you when your model is ready to be used.

Tango

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