CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENTS

Centurion
UNIVERSITY

Assignment 1

Course Title: System Integration with Dymola

Course Code: CUTM1022 (0-0-2)

Submitted to:

Dr. Sudhansu Kumar Samal

Faculty of

School of Engineering & Technology, Bhubaneswar

Submitted by:

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Registration no: 200301120128

Branch: B-Tech in Computer Science and Engineering's

Semester: 4th Sem

Section: C

Experiment No.: 1

To measure the current of DC (Direct Connection) and AC (Alternative Current) connections.

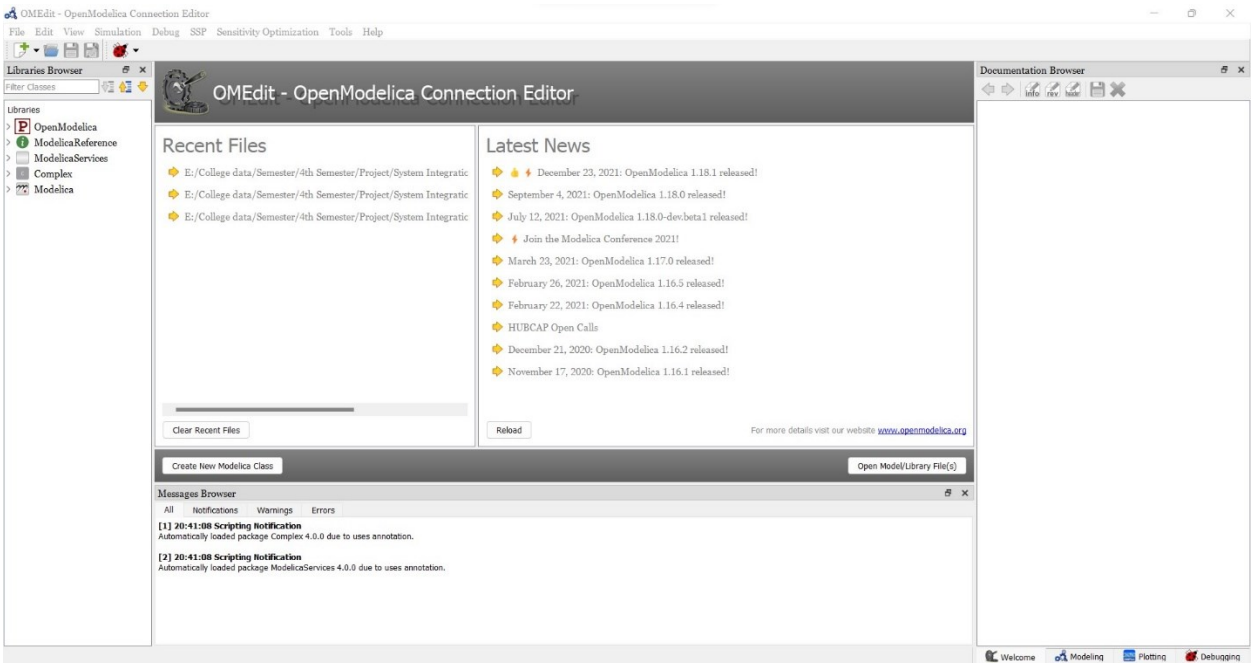
Requirements:

OpenModelica software

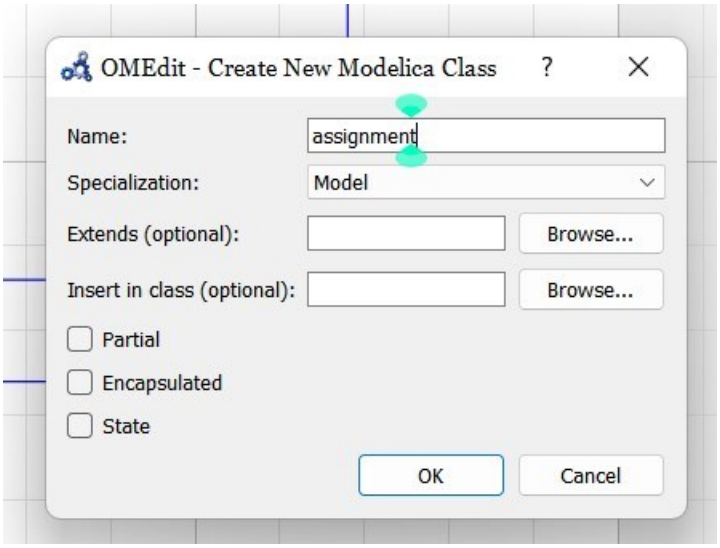
Procedure:

DC Current Measurement

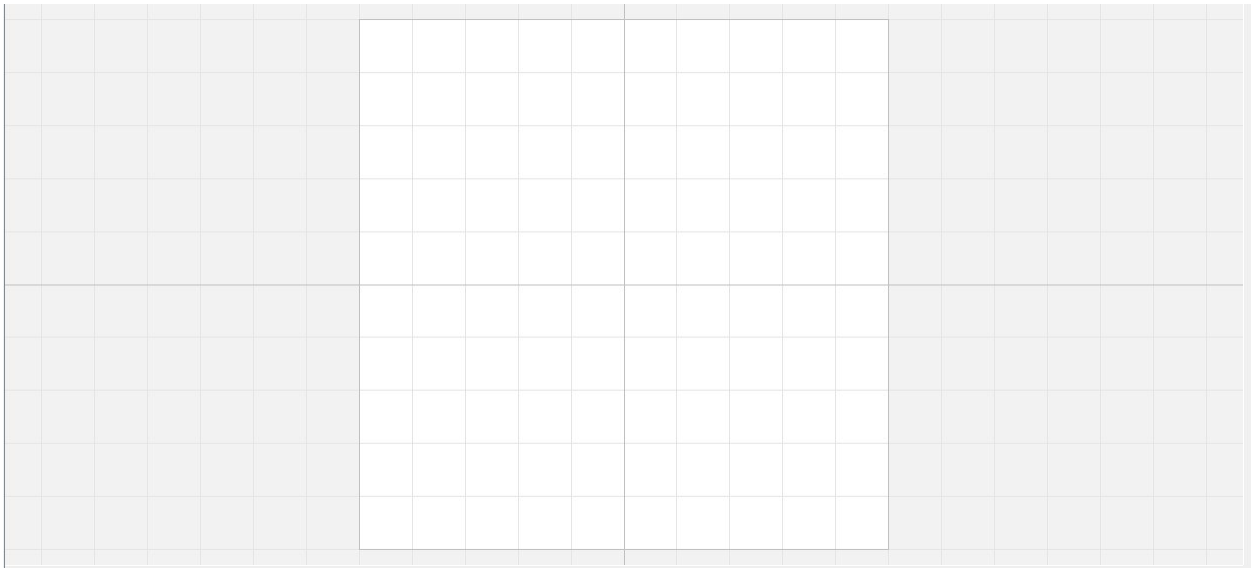
Step 1: Open Openmodelica connection editor



Step 2: Click on New Modelica class, give a new Modelica class name, then click on ok



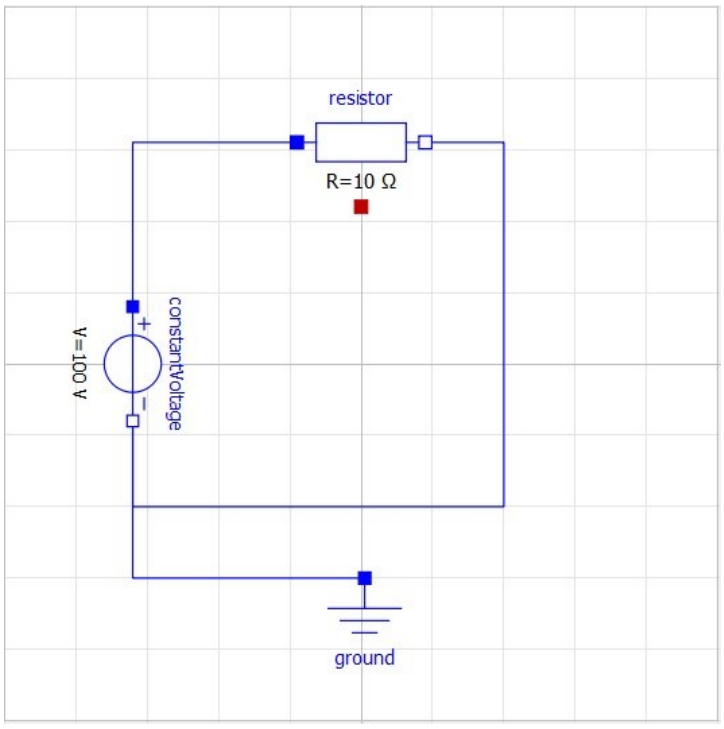
Step 3: Then this type of page will appear

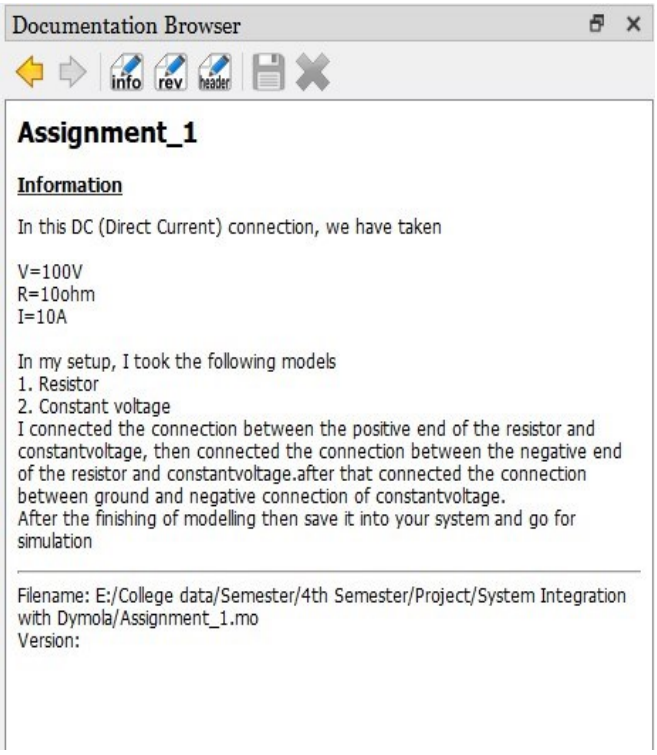


Step 4: Go to Modelica packages, then go to electrical, then analog, then basic, then drag resistor and ground to the modeling field , then choose the constant voltage from source packages.

After that I connected the connection between the positive end of the resistor and constanttvoltage, then connected the connection between the negative end of the resistor and constantvoltage.after that connected the connection between ground and negative connection of constantvoltage.

Add some information of the modeling





Step 5: After the completion of modeling then save the Modelica file into your pc as .mo extensions, after that go for simulation, when clicking on simulation then compilation occurs, graphical language changes into modelica language.

```
model Assignment_1DC
  Modelica.Electrical.Analog.Basic.Resistor resistor(R = 10)
annotation(
    Placement(visible = true, transformation(origin = {0, 62},
extent = {{-18, -18}, {18, 18}}, rotation = 0)));
  Modelica.Electrical.Analog.Basic.Ground ground annotation(
    Placement(visible = true, transformation(origin = {1, -77},
extent = {{-17, -17}, {17, 17}}, rotation = 0)));
  Modelica.Electrical.Analog.Sources.ConstantVoltage
constantVoltage(V = 100) annotation(
    Placement(visible = true, transformation(origin = {-64, 0},
extent = {{-16, -16}, {16, 16}}, rotation = -90)));
equation
  connect(constantVoltage.n, ground.p) annotation(
    Line(points = {{-64, -16}, {-64, -60}, {2, -60}}, color =
{0, 0, 255}));
  connect(constantVoltage.n, resistor.n) annotation(
    Line(points = {{-64, -16}, {-64, -40}, {40, -40}, {40, 62},
{18, 62}}, color = {0, 0, 255}));
  connect(constantVoltage.p, resistor.p) annotation(
    Line(points = {{-64, 16}, {-64, 62}, {-18, 62}}, color = {0,
0, 255}));
  annotation(
    uses(Modelica(version = "4.0.0")),
    Documentation(info = "<html><head></head><body><!--
StartFragment--><span style=\"font-family: 'MS Shell Dlg 2';
font-size: 12px;\">In this DC (Direct Current) connection, we
have taken</span><div style=\"font-family: 'MS Shell Dlg 2';
font-size: 12px;\"><br></div><div style=\"font-family: 'MS Shell
Dlg 2'; font-size: 12px;\">V=100V</div><div style=\"font-family:
'MS Shell Dlg 2'; font-size: 12px;\">R=10ohm</div><div
style=\"font-family: 'MS Shell Dlg 2'; font-size:
12px;\">I=10A</div><div style=\"font-family: 'MS Shell Dlg 2';
font-size: 12px;\"><br></div><div style=\"font-family: 'MS Shell
Dlg 2'; font-size: 12px;\">In my setup, I took the following
models</div><div style=\"font-family: 'MS Shell Dlg 2'; font-
size: 12px;\">1. Resistor</div><div style=\"font-family: 'MS
Shell Dlg 2'; font-size: 12px;\">2. sine voltage</div><div
style=\"font-family: 'MS Shell Dlg 2'; font-size: 12px;\">3.
Ground</div><div style=\"font-family: 'MS Shell Dlg 2'; font-
size: 12px;\">I connected the connection between the positive
end of the resistor and constantvoltage, then connected the
connection between the negative end of the resistor and
```

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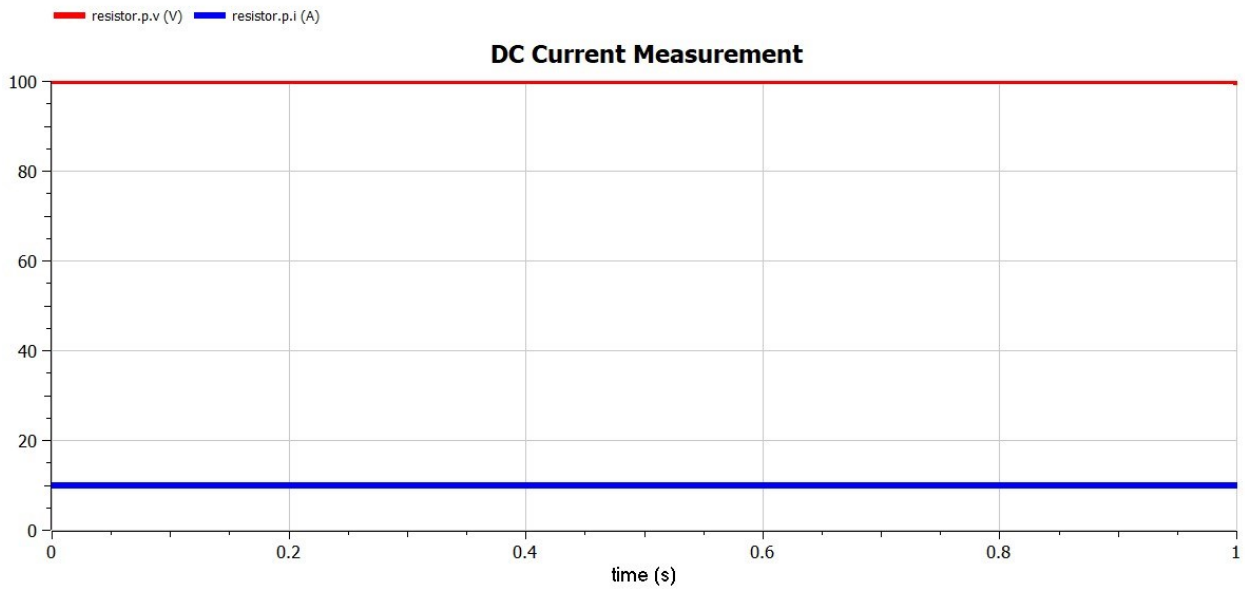
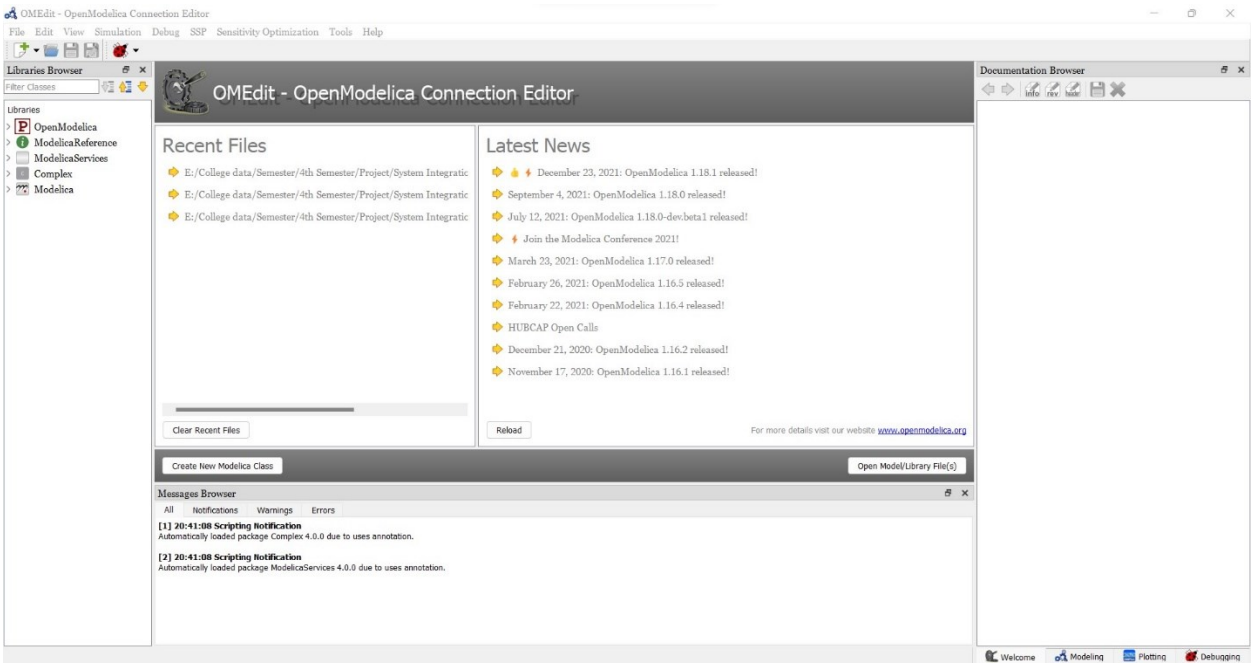
constantvoltage.after that connected the connection between
ground and negative connection of constantvoltage.</div><div
style=\"font-family: 'MS Shell Dlg 2'; font-size: 12px;\">After
the finishing of modelling then save it into your system and go
for simulation.</div><!--EndFragment--></body></html>"));
end Assignment_1DC;
```

Step 6:after the compilation it will show you a plotting area where you have to plot, as per your given data you have to simulate.

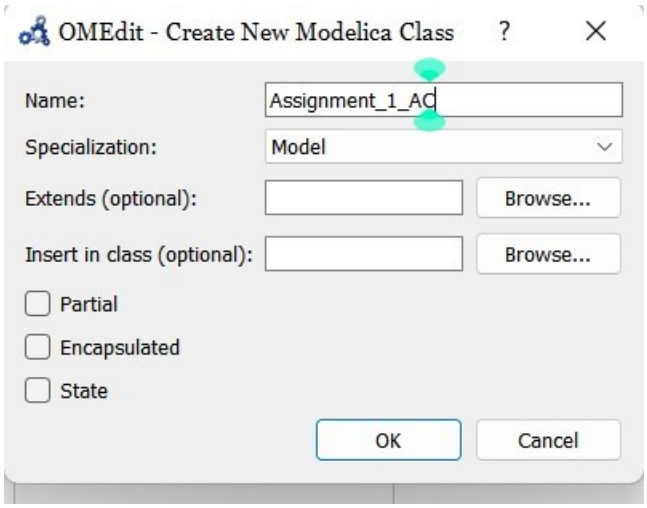


AC Current Measurement

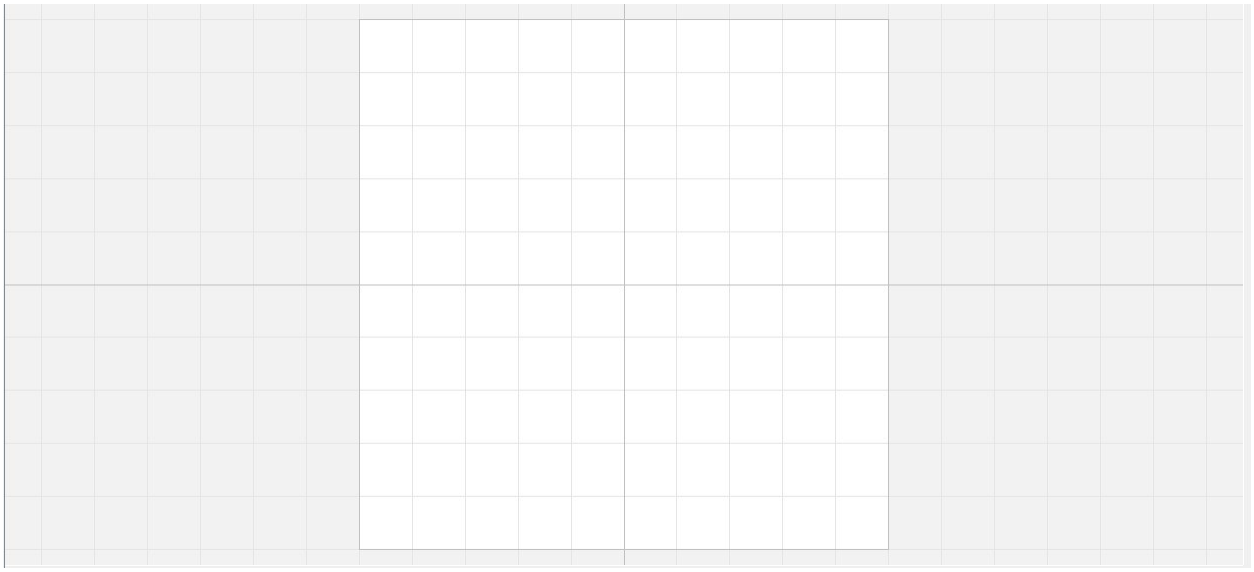
Step 1: Open Openmodelica connection editor



Step 2: Click on New Modelica class, give a new Modelica class name, then click on ok



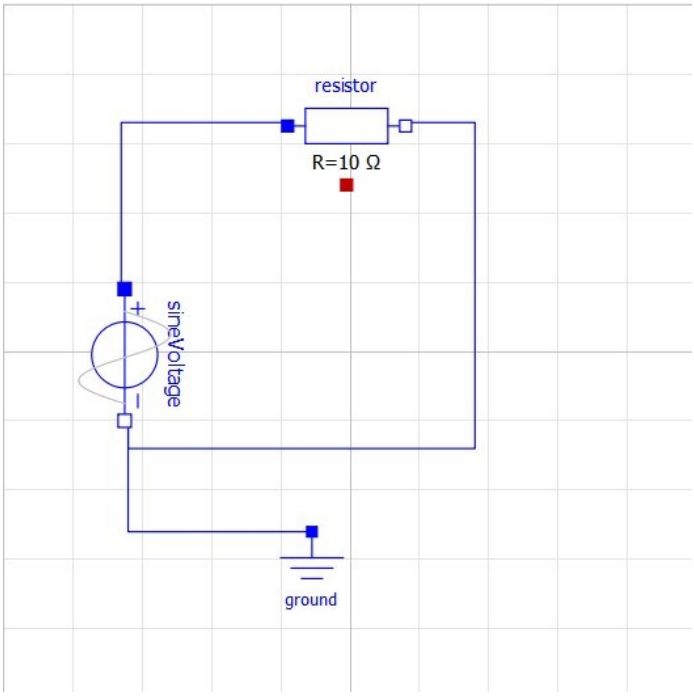
Step 3: Then this type of page will appear

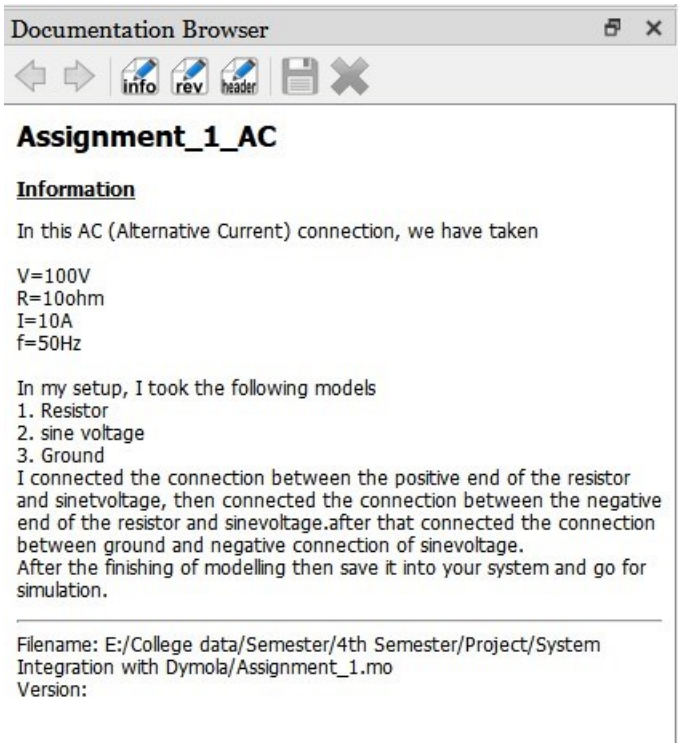


Step 4: Go to Modelica packages, then go to electrical, then analog, then basic, then drag resistor and ground to the modeling field , then choose the constant voltage from source packages.

After that I connected the connection between the positive end of the resistor and sinevoltage, then connected the connection between the negative end of the resistor and sinevoltage.after that connected the connection between ground and negative connection of sinevoltage.

Add some information of the modeling





Step 5: After the completion of modeling then save the Modelica file into your pc as .mo extensions, after that go for simulation, when clicking on simulation then compilation occurs, graphical language changes into modelica language.

```
model Assignment_1_AC
  Modelica.Electrical.Analog.Basic.Resistor resistor(R = 10)
annotation(
    Placement(visible = true, transformation(origin = {-1, 65},
extent = {{-17, -17}, {17, 17}}, rotation = 0)));
  Modelica.Electrical.Analog.Sources.SineVoltage sineVoltage(V =
100, f = 50) annotation(
    Placement(visible = true, transformation(origin = {-65, -1},
extent = {{-19, -19}, {19, 19}}, rotation = -90)));
  Modelica.Electrical.Analog.Basic.Ground ground annotation(
    Placement(visible = true, transformation(origin = {-11, -
67}, extent = {{-15, -15}, {15, 15}}, rotation = 0)));
equation
  connect(sineVoltage.p, resistor.p) annotation(
    Line(points = {{-64, 18}, {-66, 18}, {-66, 66}, {-18, 66}},
color = {0, 0, 255}));
  connect(sineVoltage.n, resistor.n) annotation(
    Line(points = {{-64, -20}, {-64, -28}, {36, -28}, {36, 66},
{16, 66}}, color = {0, 0, 255}));
  connect(sineVoltage.n, ground.p) annotation(
    Line(points = {{-64, -20}, {-64, -52}, {-10, -52}}, color =
{0, 0, 255}));
  annotation(
    uses(Modelica(version = "4.0.0")),
    Documentation(info = "<html><head></head><body><!--
StartFragment--><span style=\"font-family: 'MS Shell Dlg 2';
font-size: 12px;\">In this AC (Alternative Current) connection,
we have taken</span><div style=\"font-family: 'MS Shell Dlg 2';
font-size: 12px;\"><br></div><div style=\"font-family: 'MS Shell
Dlg 2'; font-size: 12px;\">V=100V</div><div style=\"font-family:
'MS Shell Dlg 2'; font-size: 12px;\">R=10ohm</div><div
style=\"font-family: 'MS Shell Dlg 2'; font-size:
12px;\">I=10A</div><div style=\"font-family: 'MS Shell Dlg 2';
font-size: 12px;\">f=50Hz</div><div style=\"font-family: 'MS
Shell Dlg 2'; font-size: 12px;\"><br></div><div style=\"font-
family: 'MS Shell Dlg 2'; font-size: 12px;\">In my setup, I took
the following models</div><div style=\"font-family: 'MS Shell
Dlg 2'; font-size: 12px;\">1. Resistor</div><div style=\"font-
family: 'MS Shell Dlg 2'; font-size: 12px;\">2. sine
voltage</div><div style=\"font-family: 'MS Shell Dlg 2'; font-
size: 12px;\">3. Ground</div><div style=\"font-family: 'MS Shell
Dlg 2'; font-size: 12px;\">I connected the connection between
the positive end of the resistor and sinetvoltage, then
```

```
connected the connection between the negative end of the
resistor and sinevoltage.after that connected the connection
between ground and negative connection of sinevoltage.</div><div
style=\"font-family: 'MS Shell Dlg 2'; font-size: 12px;\">After
the finishing of modelling then save it into your system and go
for simulation.</div><!--EndFragment--></body></html>"));
end Assignment_1_AC;
```

Writable | Model | Text View | Assignment_1_AC | E:/College data/Semester/4th Semester/Project/System Integration with Dymola/Assignment_1 AC.mo

```
1  model Assignment_1_AC
2    Modelica.Electrical.Analog.Basic.Resistor resistor(R = 10) annotation( ...);
4    Modelica.Electrical.Analog.Sources.SineVoltage sineVoltage(V = 100, f = 50) annotation( ...);
6    Modelica.Electrical.Analog.Basic.Ground ground annotation( ...);
8  equation
9    connect(sineVoltage.p, resistor.p) annotation( ...);
11   connect(sineVoltage.n, resistor.n) annotation( ...);
13   connect(sineVoltage.n, ground.p) annotation( ...);
15   annotation( ...);
18 end Assignment_1_AC;
19
```

Step 6: After the compilation it will show you a plotting area where you have to plot, as per your given data you have to simulate.