

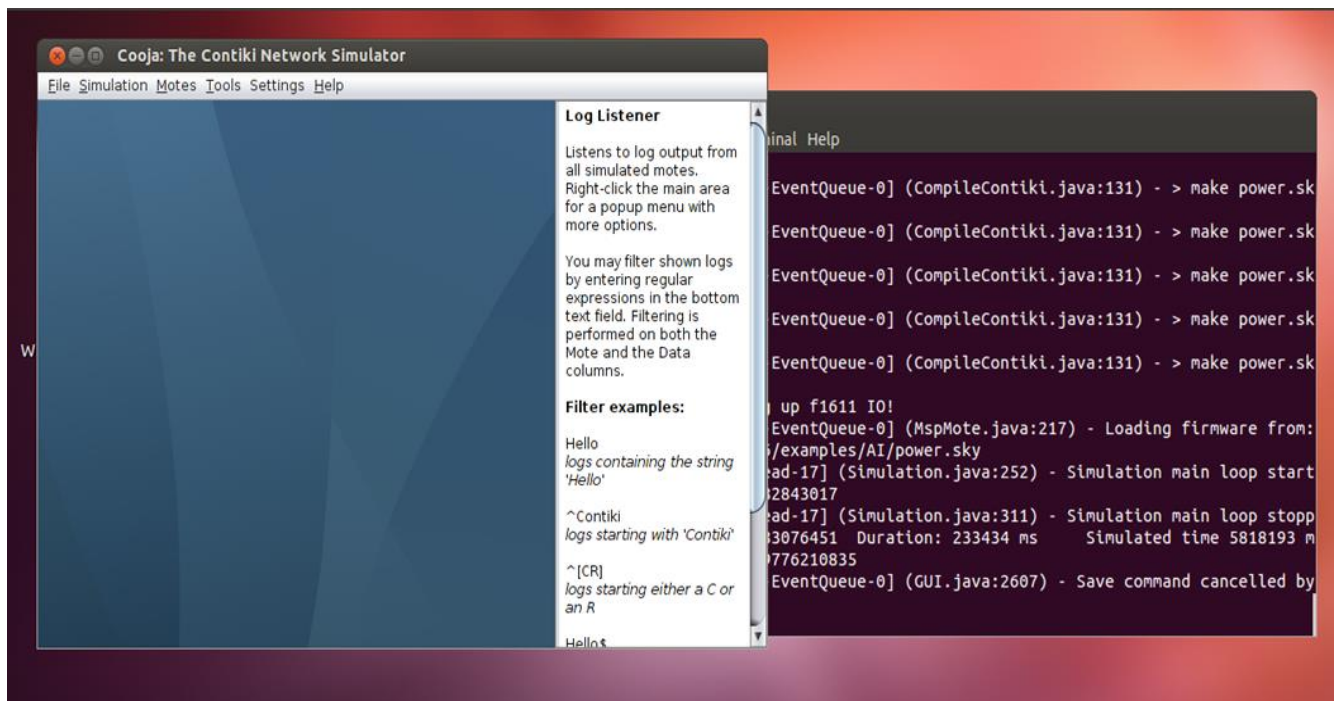
# CS 501 – Internet of Things

## Assignment 3

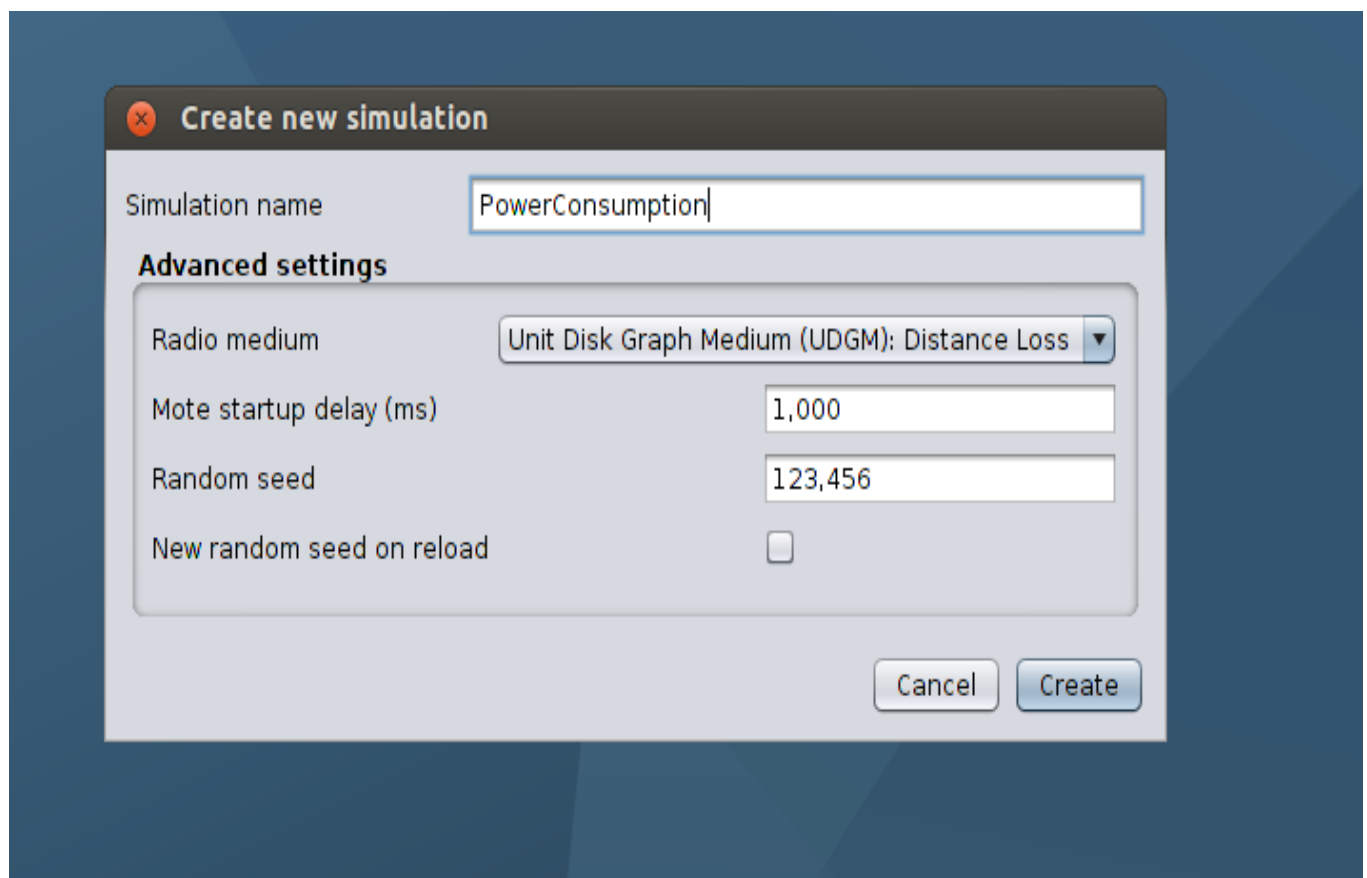
### Group Members

Student Name	Student Id	Student Email ID
Lohitha Yalavarthi	002289255	lyalavarthi20@ubishops.ca
Nitish Kumar	002286814	npilla20@ubishops.ca
Bhargav Movva	002292699	BMOVVA21@ubishops.ca

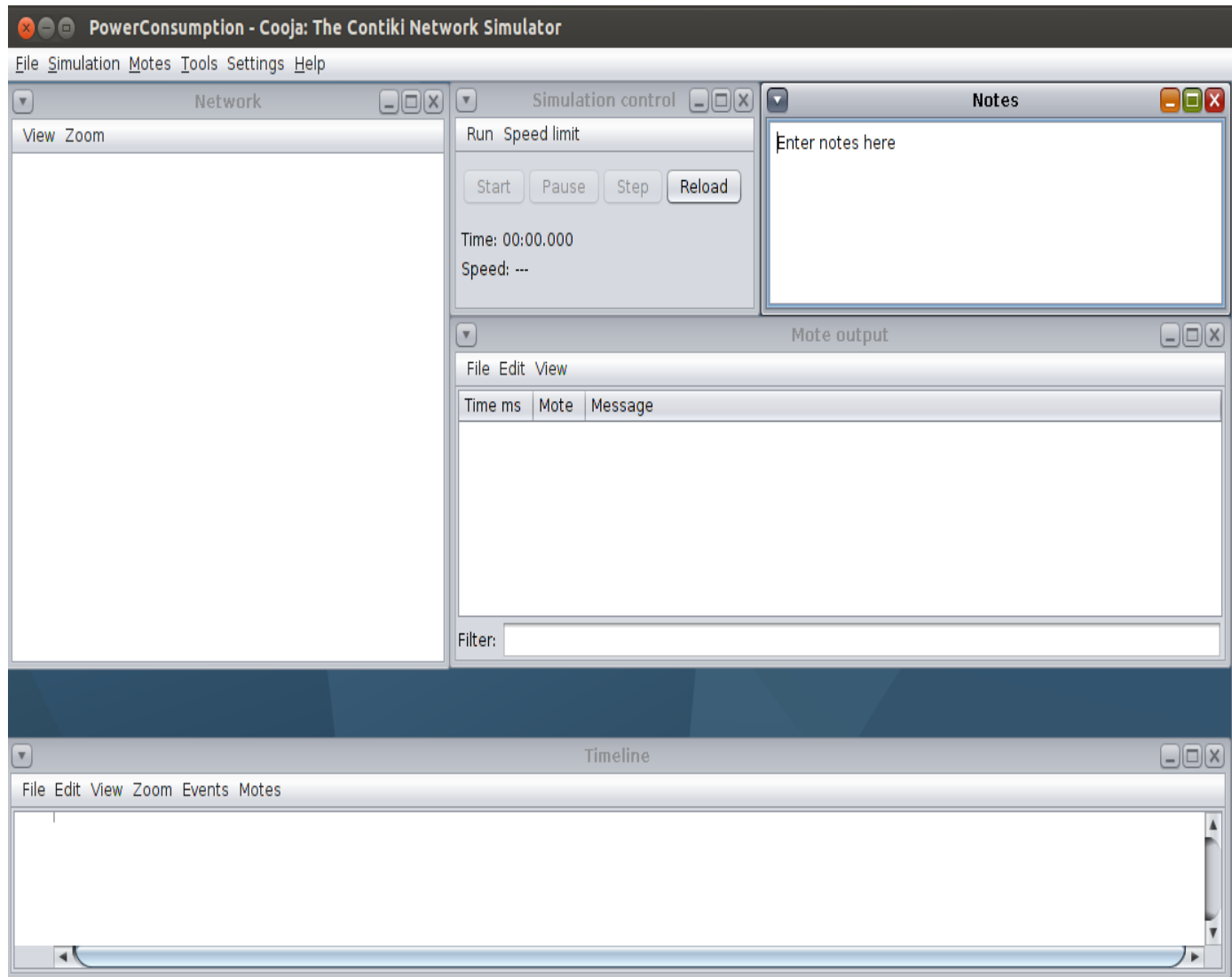
1. Click on Cooja Desktop Icon and it opens the cooja: The Contiki Network Simulator



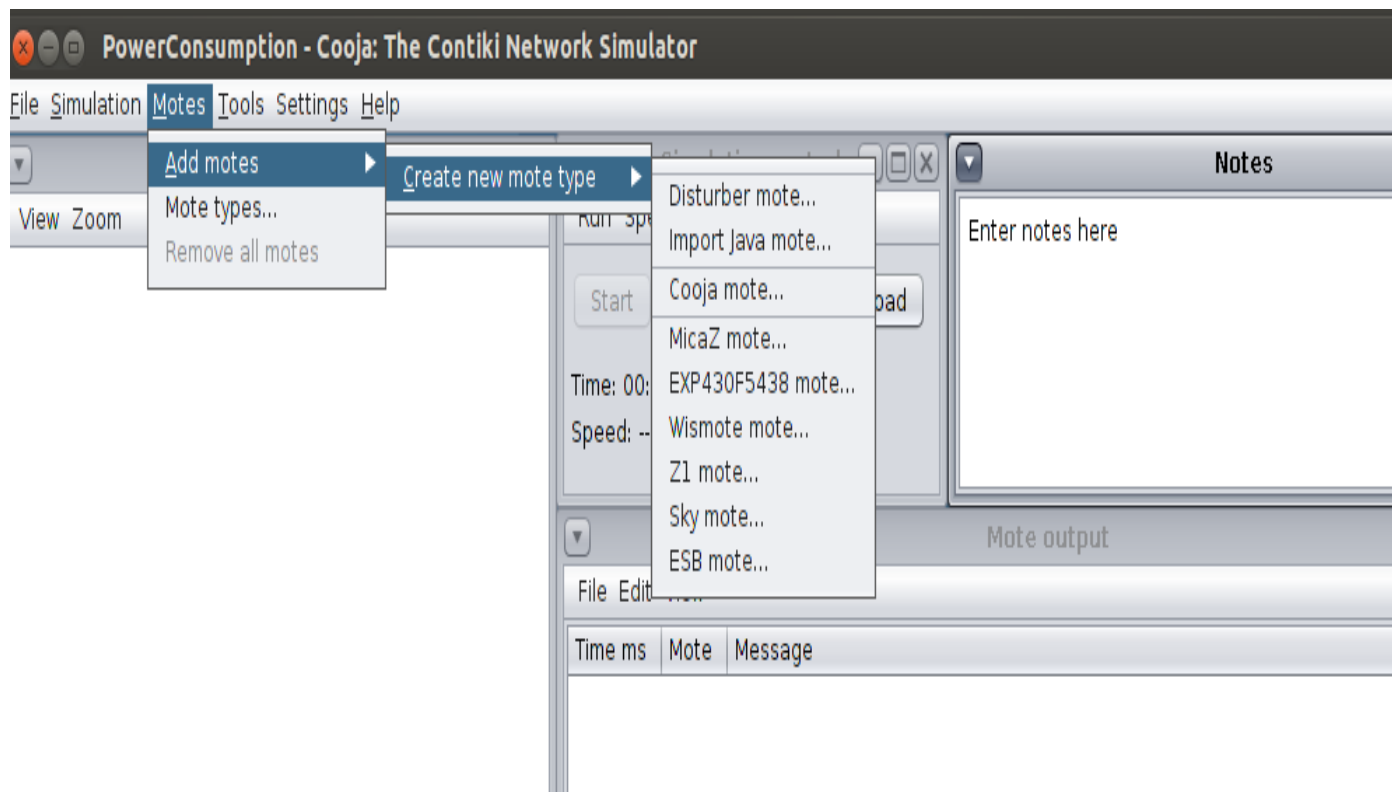
2. Click the new simulation under File menu and it opens the create new simulation dialog and name the simulation as Power Consumption as shown in the screenshot and a new simulation gets created by clicking on the create button.



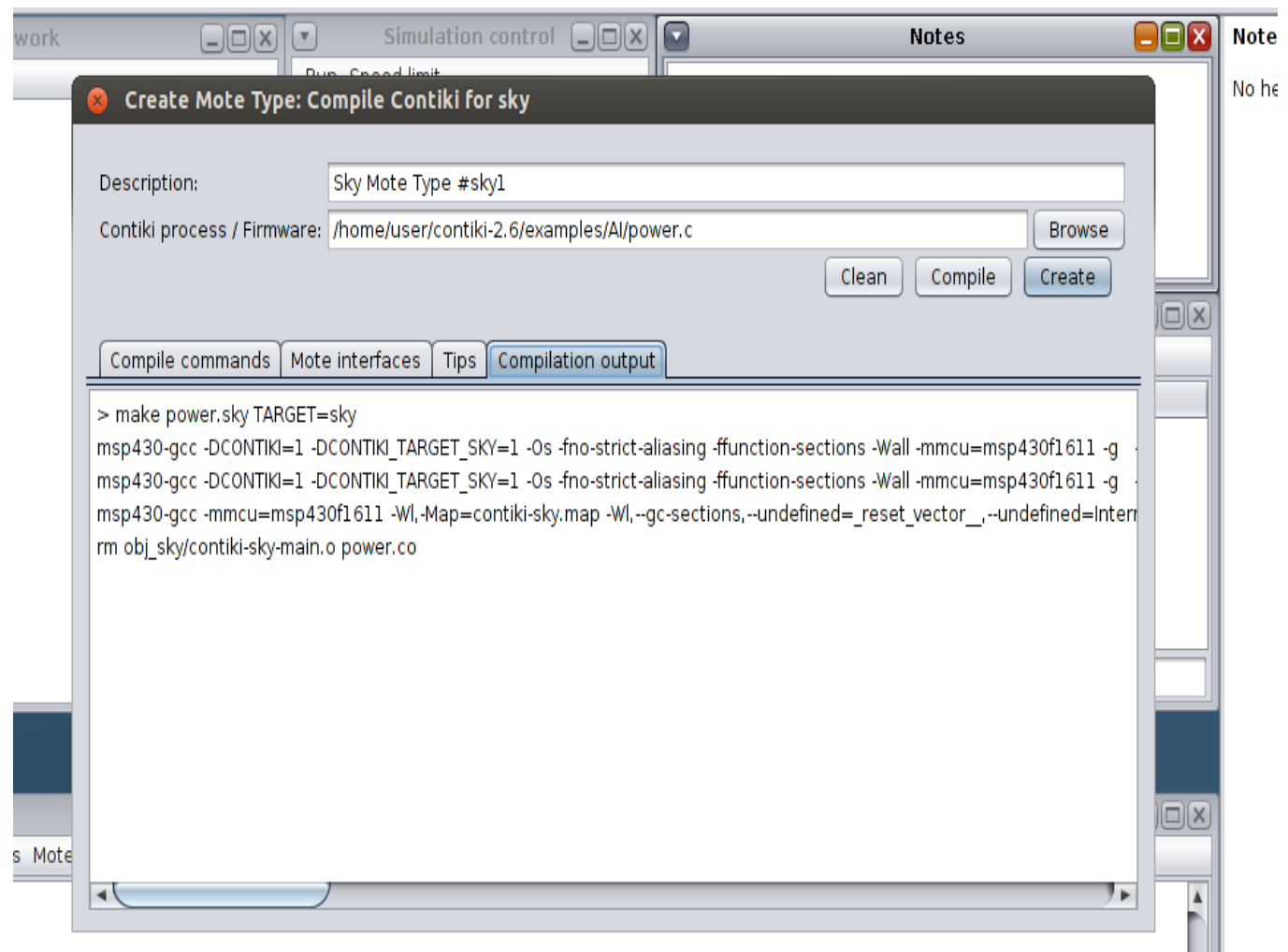
3. It brings up the new simulator window ( PowerConsumption -Cooja: The Contiki Network Simulator ) which has Network and motes output and Notes and Timeline and Simulation control windows.



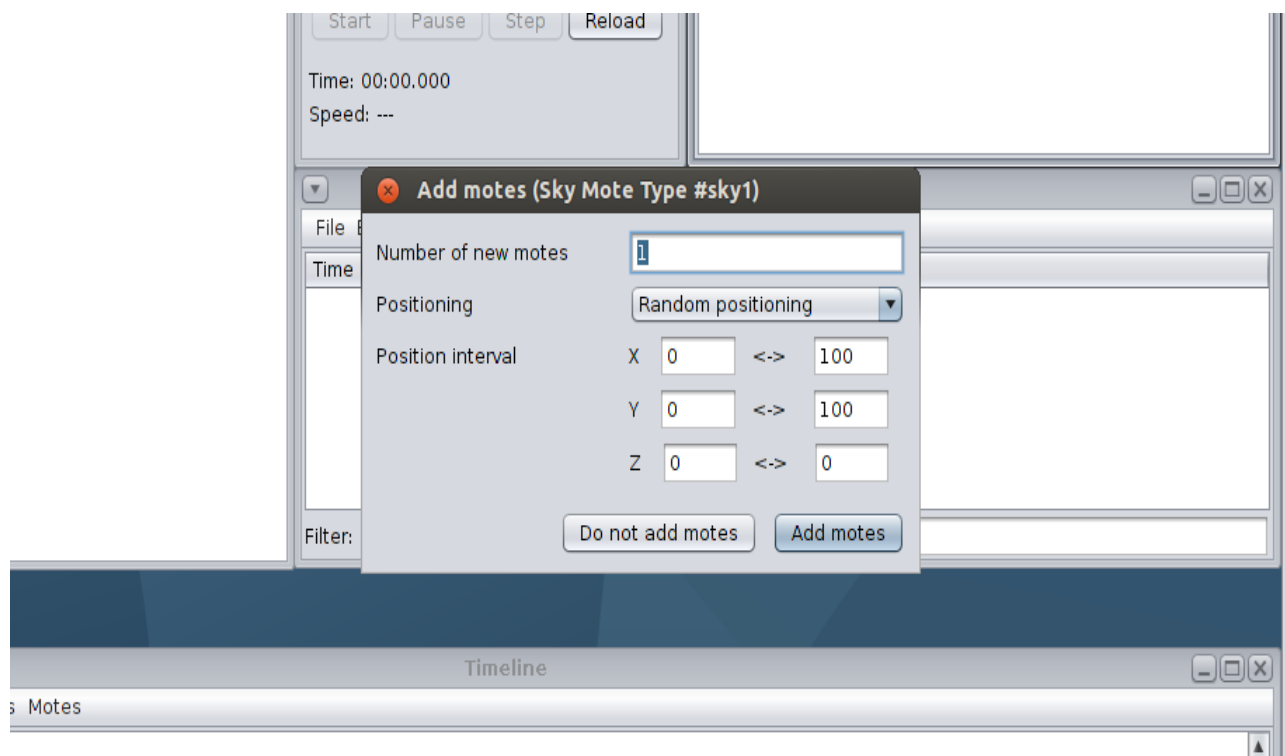
4. Click on Motes option in the simulator menu and select Add Motes->Create new mote type-> Sky mote to create sky mote type



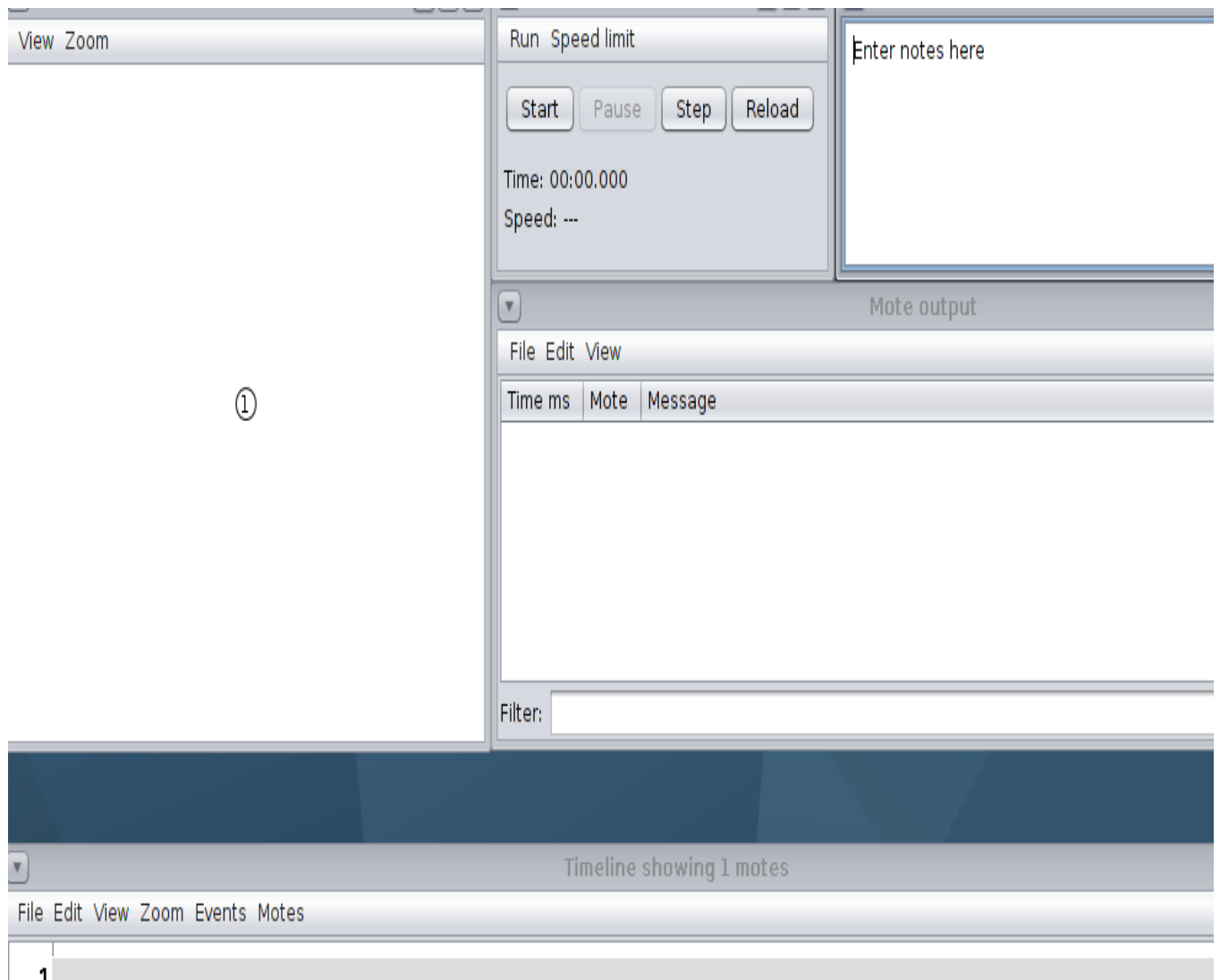
5. After selecting the above options opens Create Mote Type : Compile Contiki for sky dialog where Description name and Contiki process/Firmware is given and click the compile button and the compilation results shows in the compilation output Tab.



**6.** After successful compilation, clicking on the create button opens a dialog to enter the no of motes. no of motes entered here are 1 as shown in the screenshot.



**7.** Click the start button in the simulation control window to start the simulation.





8. The compilation results are seen in the mote output. Here the results are showed before adding computation.

Mote output		
File Edit View		
Time ms	Mote	Message
644	ID:1	Rime started with address 1.0
654	ID:1	MAC 01:00:00:00:00:00:00:00 Contiki 2.6 started. Node id is set to 1.
663	ID:1	CSMA ContikiMAC, channel check rate 8 Hz, radio channel 26
666	ID:1	Starting 'powertrace example'
1689	ID:1	132 P 1.0 0 1238 31482 0 182 0 182 1238 31482 0 182 0 182 (radio 0.55% / 0.55% tx 0.00% / 0.00% listen 0.55% / 0.55%)
2689	ID:1	260 P 1.0 1 3276 62209 0 390 0 390 2035 30727 0 208 0 208 (radio 0.59% / 0.63% tx 0.00% / 0.00% listen 0.59% / 0.63%)
3689	ID:1	388 P 1.0 2 5314 92937 0 598 0 598 2035 30728 0 208 0 208 (radio 0.60% / 0.63% tx 0.00% / 0.00% listen 0.60% / 0.63%)
4689	ID:1	516 P 1.0 3 7346 123671 0 806 0 806 2029 30734 0 208 0 208 (radio 0.61% / 0.63% tx 0.00% / 0.00% listen 0.61% / 0.63%)
5690	ID:1	644 P 1.0 4 9387 154396 0 1014 0 1014 2038 30725 0 208 0 208 (radio 0.61% / 0.63% tx 0.00% / 0.00% listen 0.61% / 0.63%)
6690	ID:1	772 P 1.0 5 11467 185081 0 1222 0 1222 2077 30685 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
7690	ID:1	900 P 1.0 6 13545 215768 0 1430 0 1430 2075 30687 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
8691	ID:1	1028 P 1.0 7 15623 246455 0 1638 0 1638 2075 30687 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
9691	ID:1	1156 P 1.0 8 17715 277128 0 1846 0 1846 2089 30673 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
10691	ID:1	1284 P 1.0 9 19808 307801 0 2054 0 2054 2090 30673 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
11691	ID:1	1412 P 1.0 10 21901 338474 0 2262 0 2262 2090 30673 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
12691	ID:1	1540 P 1.0 11 24022 369119 0 2470 0 2470 2118 30645 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
13691	ID:1	1668 P 1.0 12 26122 399784 0 2678 0 2678 2097 30665 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
14691	ID:1	1796 P 1.0 13 28222 430449 0 2886 0 2886 2097 30665 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
15691	ID:1	1924 P 1.0 14 30322 461114 0 3094 0 3094 2097 30665 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
16691	ID:1	2052 P 1.0 15 32423 491779 0 3302 0 3302 2098 30665 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
17691	ID:1	2180 P 1.0 16 34544 522424 0 3510 0 3510 2118 30645 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
18691	ID:1	2308 P 1.0 17 36644 553089 0 3718 0 3718 2097 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
19691	ID:1	2436 P 1.0 18 38745 583754 0 3926 0 3926 2098 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
20691	ID:1	2564 P 1.0 19 40846 614419 0 4134 0 4134 2098 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
21691	ID:1	2692 P 1.0 20 42947 645084 0 4342 0 4342 2098 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
22691	ID:1	2820 P 1.0 21 45048 675749 0 4550 0 4550 2098 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
23691	ID:1	2948 P 1.0 22 47161 706402 0 4758 0 4758 2110 30653 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
24691	ID:1	3076 P 1.0 23 49261 737067 0 4966 0 4966 2097 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)



9. Here these are the compilation results which are shown after adding computation( adding two numbers & multiplying two numbers(number1 ,number2)). After adding computation we can clearly see the increase in power consumption.

Mote output		
Time ms	Mote	Message
644	ID:1	Rime started with address 1.0
654	ID:1	MAC 01:00:00:00:00:00:00:00 Contiki 2.6 started. Node id is set to 1.
663	ID:1	CSMA ContikiMAC, channel check rate 8 Hz, radio channel 26
666	ID:1	Starting 'powertrace example'
1689	ID:1	132 P 1.0 0 1238 31482 0 182 0 182 1238 31482 0 182 0 182 (radio 0.55% / 0.55% tx 0.00% / 0.00% listen 0.55% / 0.55%)
2689	ID:1	260 P 1.0 1 3276 62209 0 390 0 390 2035 30727 0 208 0 208 (radio 0.59% / 0.63% tx 0.00% / 0.00% listen 0.59% / 0.63%)
3689	ID:1	388 P 1.0 2 5314 92937 0 598 0 598 2035 30728 0 208 0 208 (radio 0.60% / 0.63% tx 0.00% / 0.00% listen 0.60% / 0.63%)
4689	ID:1	516 P 1.0 3 7346 123671 0 806 0 806 2029 30734 0 208 0 208 (radio 0.61% / 0.63% tx 0.00% / 0.00% listen 0.61% / 0.63%)
5690	ID:1	644 P 1.0 4 9387 154396 0 1014 0 1014 2038 30725 0 208 0 208 (radio 0.61% / 0.63% tx 0.00% / 0.00% listen 0.61% / 0.63%)
6690	ID:1	Sum : 30multiplication : 200 772 P 1.0 5 11574 184975 0 1222 0 1222 2184 30579 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% lis...
7690	ID:1	900 P 1.0 6 13652 215662 0 1430 0 1430 2075 30687 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
8691	ID:1	1028 P 1.0 7 15730 246349 0 1638 0 1638 2075 30687 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
9691	ID:1	1156 P 1.0 8 17823 277022 0 1846 0 1846 2090 30673 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
10691	ID:1	1284 P 1.0 9 19916 307695 0 2054 0 2054 2090 30673 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
11691	ID:1	1412 P 1.0 10 22009 338368 0 2262 0 2262 2090 30673 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
12691	ID:1	Sum : 30multiplication : 200 1540 P 1.0 11 24237 368907 0 2470 0 2470 2225 30539 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% l...
13691	ID:1	1668 P 1.0 12 26337 399572 0 2678 0 2678 2097 30665 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
14691	ID:1	1796 P 1.0 13 28438 430237 0 2886 0 2886 2098 30665 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
15691	ID:1	1924 P 1.0 14 30538 460902 0 3094 0 3094 2097 30665 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
16691	ID:1	2052 P 1.0 15 32639 491567 0 3302 0 3302 2098 30665 0 208 0 208 (radio 0.62% / 0.63% tx 0.00% / 0.00% listen 0.62% / 0.63%)
17691	ID:1	Sum : 30multiplication : 200 2180 P 1.0 16 34867 522106 0 3510 0 3510 2225 30539 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% l...
18691	ID:1	2308 P 1.0 17 36967 552771 0 3718 0 3718 2097 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
19691	ID:1	2436 P 1.0 18 39068 583436 0 3926 0 3926 2098 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
20691	ID:1	2564 P 1.0 19 41169 614101 0 4134 0 4134 2098 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
21691	ID:1	2692 P 1.0 20 43270 644766 0 4342 0 4342 2098 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
22691	ID:1	2820 P 1.0 21 45371 675431 0 4550 0 4550 2098 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)
23691	ID:1	Sum : 30multiplication : 200 2948 P 1.0 22 47591 705978 0 4758 0 4758 2217 30547 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% l...
24691	ID:1	3076 P 1.0 23 49691 736643 0 4966 0 4966 2097 30665 0 208 0 208 (radio 0.63% / 0.63% tx 0.00% / 0.00% listen 0.63% / 0.63%)

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