# DIGITAL SYSTEMS: EEE4084F Practical 4: QEMU Arm Emulator and Kernel Building



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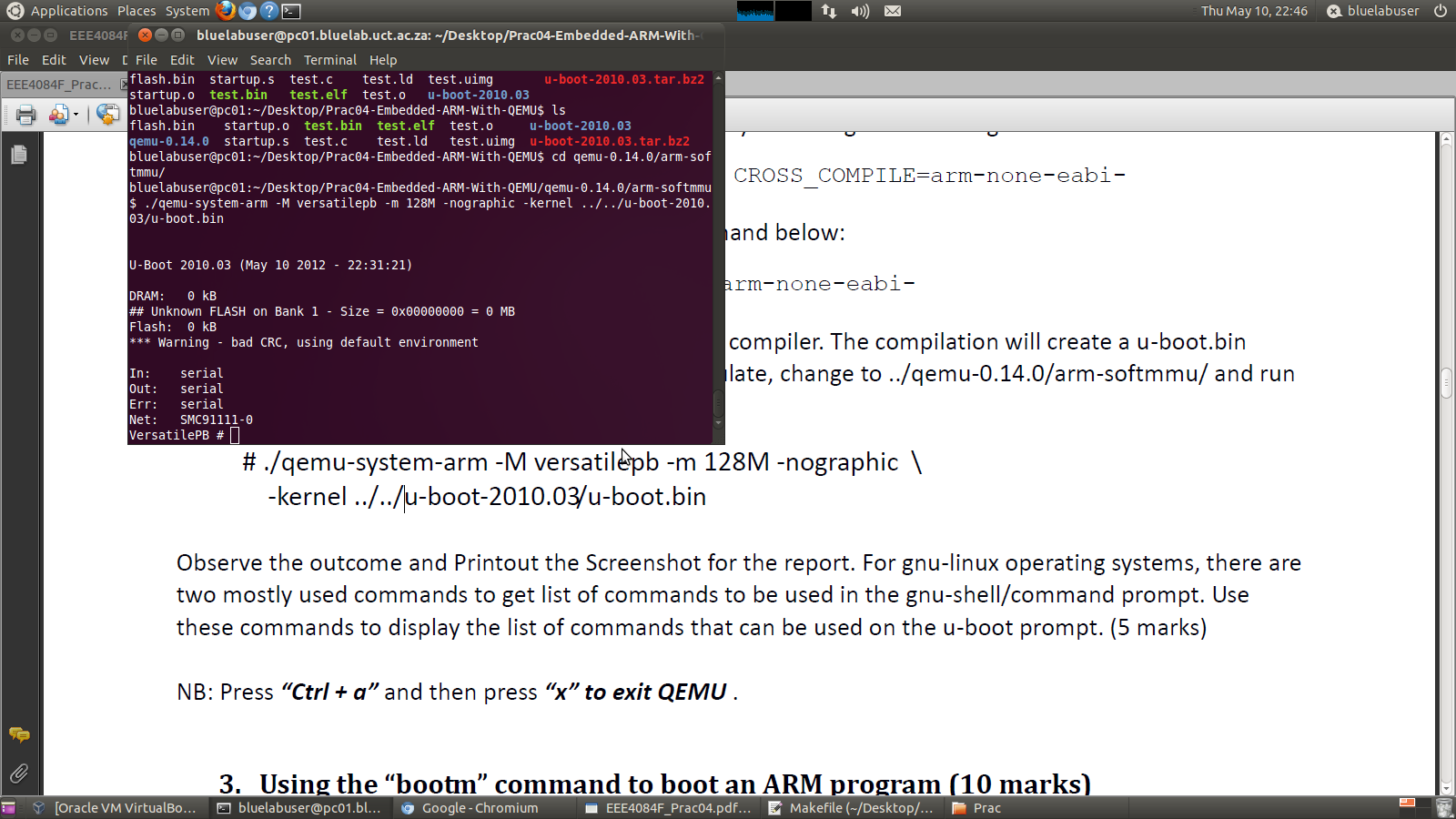
**Prepared for:  
Simon Winberg  
University of Cape Town**

**11 May 2012**

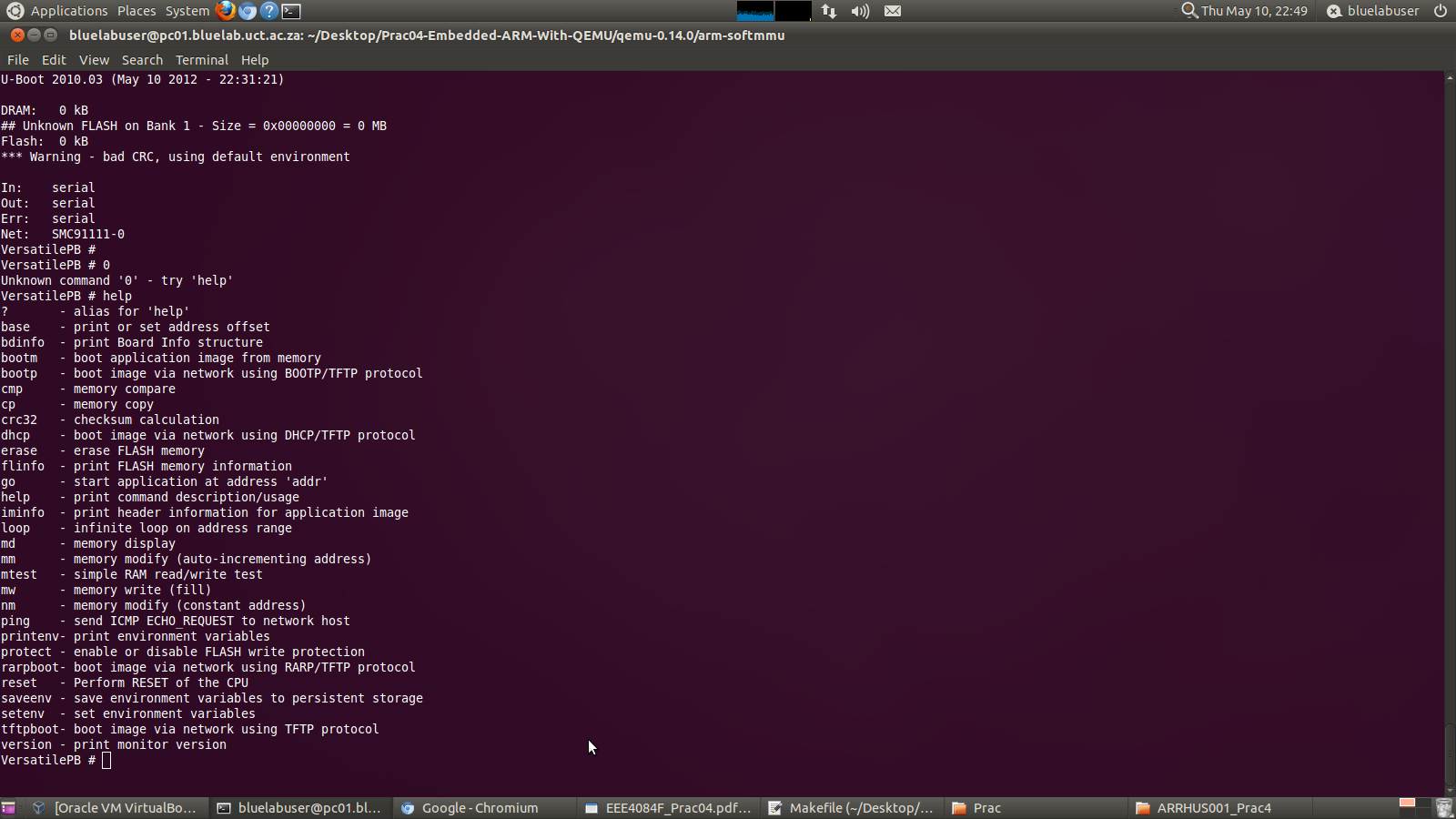
# Results

## Running the U-Boot

1. On running the u-boot command the result is shown below

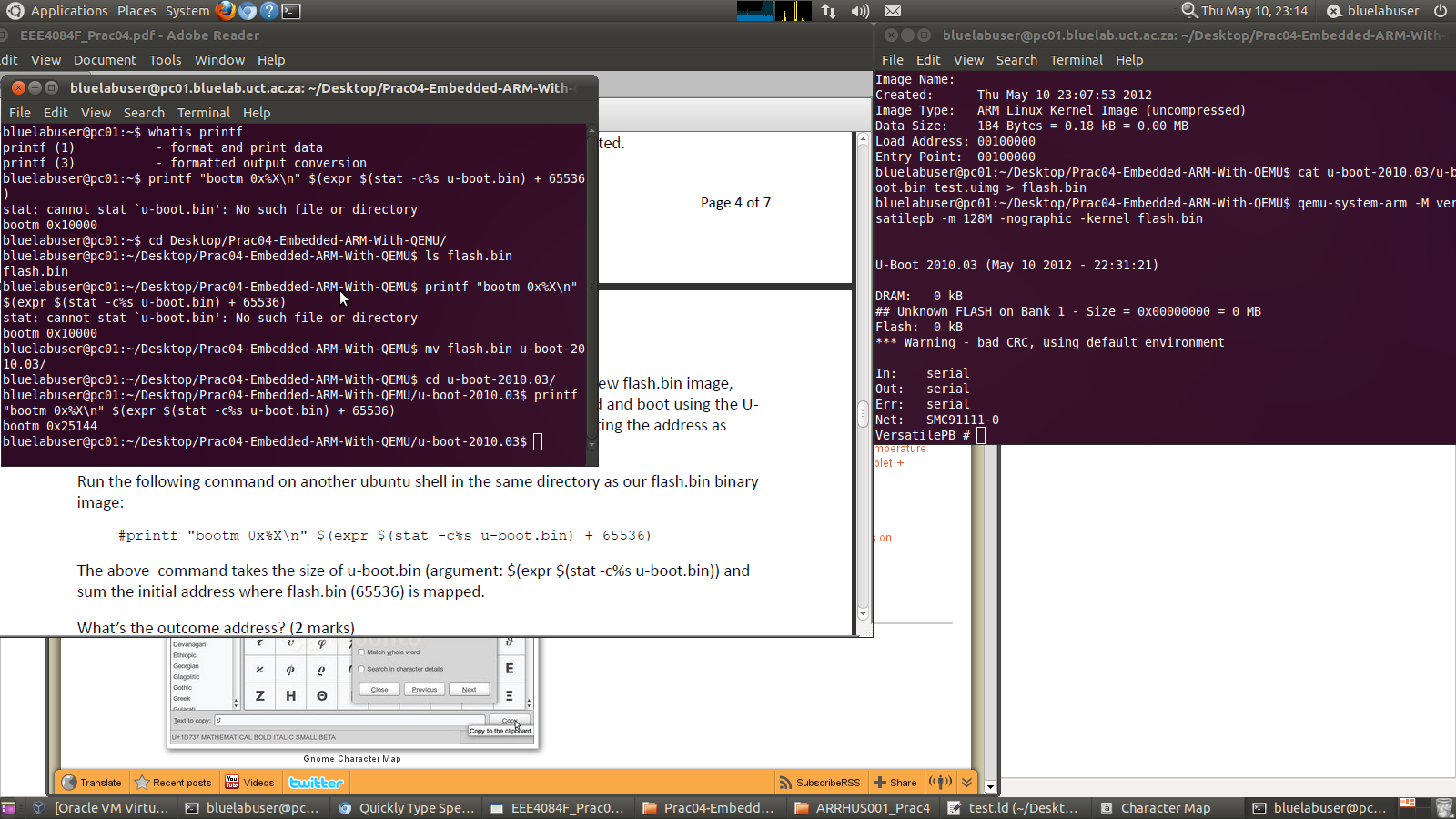


1. The commands to display the list of commands are “help” and “?”

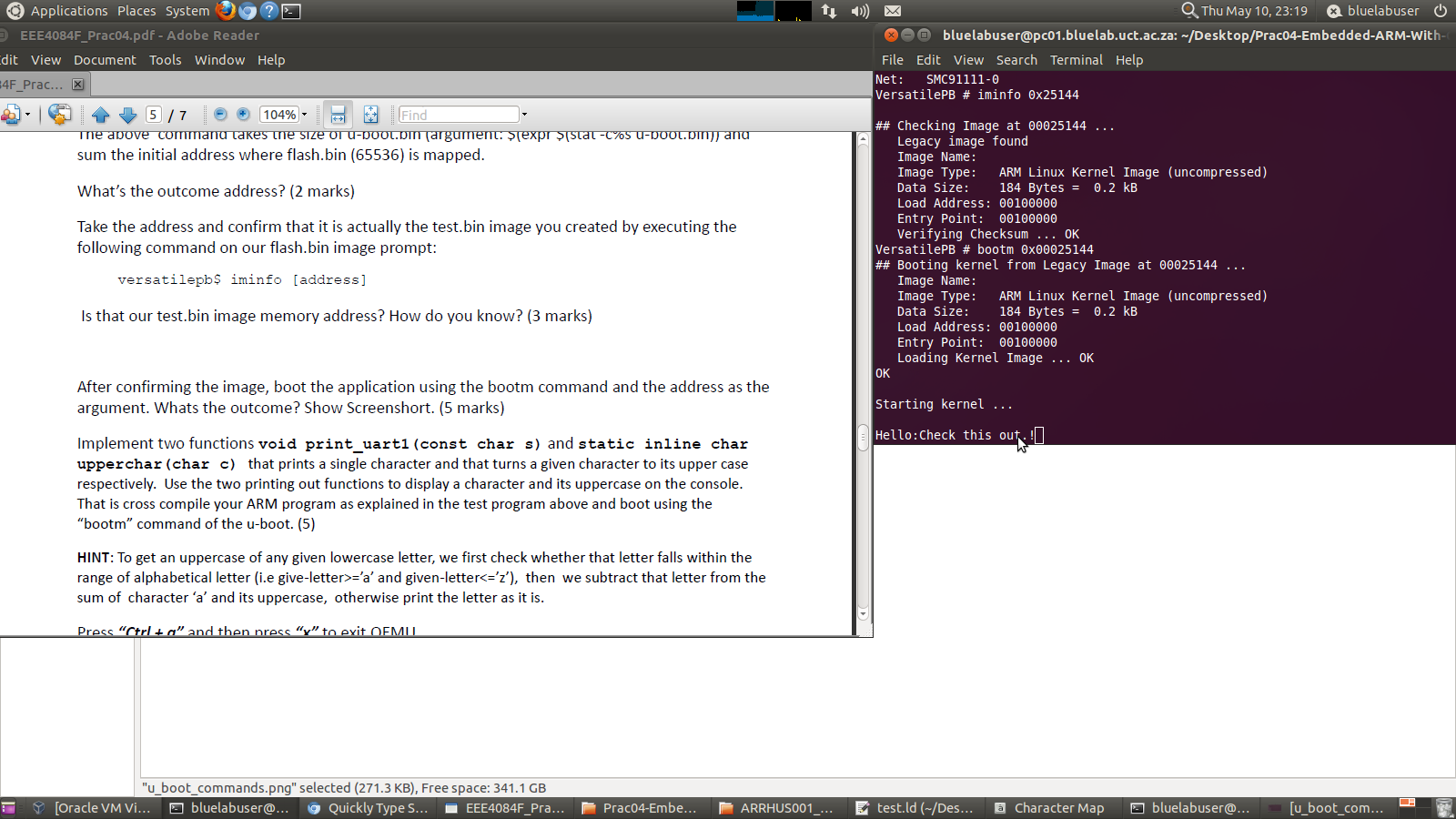


## Using the “bootm” command to boot an ARM program

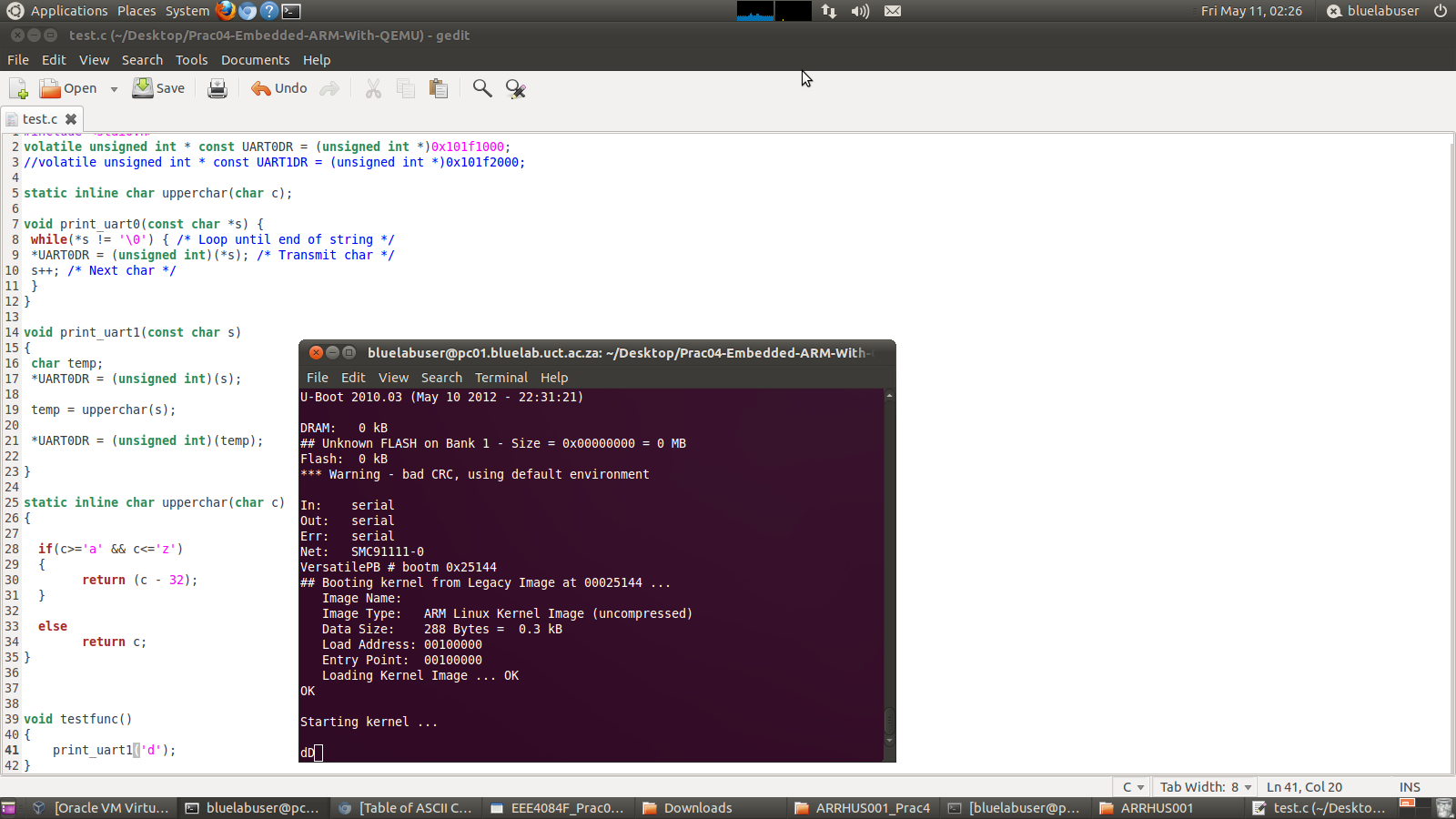
1. The outcome address is 0x25144



1. Yes, it the test.bin memory address, from the output of “iminfo” , the description (Image Type) is exactly as specified when creating test.bin and the Data Size is the same as test.bin occupies on disk.



1. The output from running the compiled test.c with both functions implemented with test character ‘d’.



## SQLite as an Embedded DBMS

1. The Entity Relationship Diagram can be modelled as below.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Plank | Rack | Sensor |
| Plank | X |  |  |
| Rack |  | X | Contains |
| Sensor |  | Monitor | X |

Sensor

Plank

Rack

Monitors

Stored on

M:1

M:1

1. The following sqlite commands were run to create the tables and populate

create table Rack(rackID int primary key,TreeType varchar(50),Time varchar(10));

create table SensorCondition(sensorID int primary key,Time varchar(10),Humidity real,Temperature real);

create table SensorAssignment(sensorAssignmentID int primary key,sensorID int,rackID int);

INSERT INTO RACK VALUES(1,'Mahagony','09:30');

INSERT INTO RACK VALUES(2,'Pine','10:24');

INSERT INTO RACK VALUES(3,'Spruce','10:25');

INSERT INTO RACK VALUES(4,'Cetrus','11:00');

INSERT INTO RACK VALUES(5,'Lyptus','07:00');

INSERT INTO RACK VALUES(6,'Blue Gum','16:00');

INSERT INTO SENSORCONDITION VALUES(1,'10:00',9,24.7);

INSERT INTO SENSORCONDITION VALUES(2,'9:30',10,25);

INSERT INTO SENSORCONDITION VALUES(3,'10:24',10,27);

INSERT INTO SENSORCONDITION VALUES(4,'16:01',11,21);

INSERT INTO SENSORCONDITION VALUES(5,'11:00',8,20);

INSERT INTO SENSORASSIGNMENT VALUES(1,3,2);

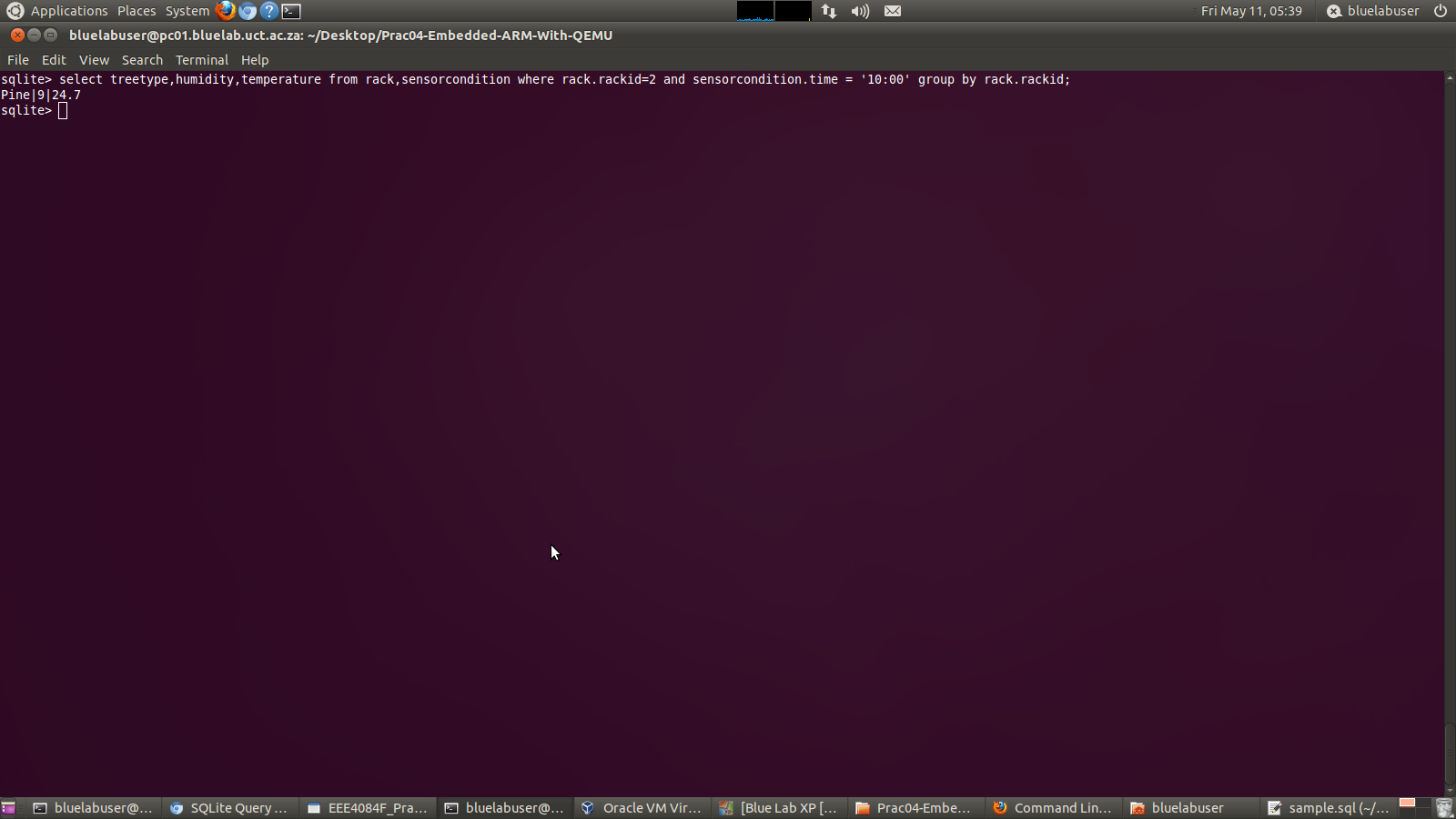
INSERT INTO SENSORASSIGNMENT VALUES(2,2,4);

INSERT INTO SENSORASSIGNMENT VALUES(3,4,5);

INSERT INTO SENSORASSIGNMENT VALUES(4,1,1);

INSERT INTO SENSORASSIGNMENT VALUES(5,5,3);

1. select treetype,humidity,temperature from rack,sensorcondition where rack.rackid=2 and sensorcondition.time = '10:00' group by rack.rackid;



The result being Pine|9|24.7