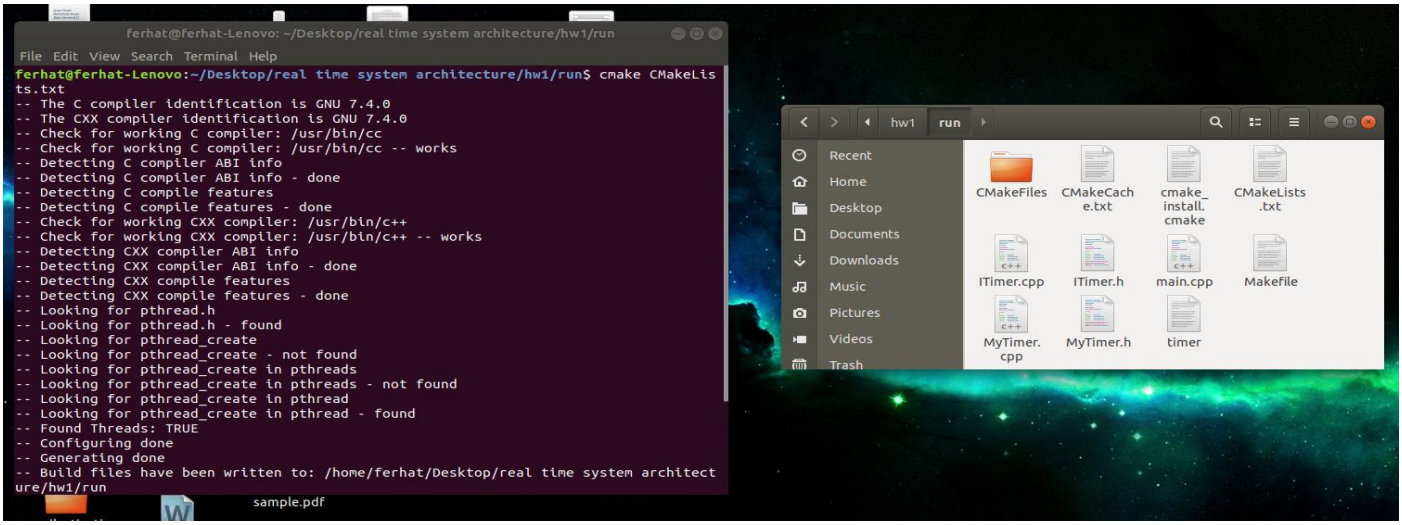
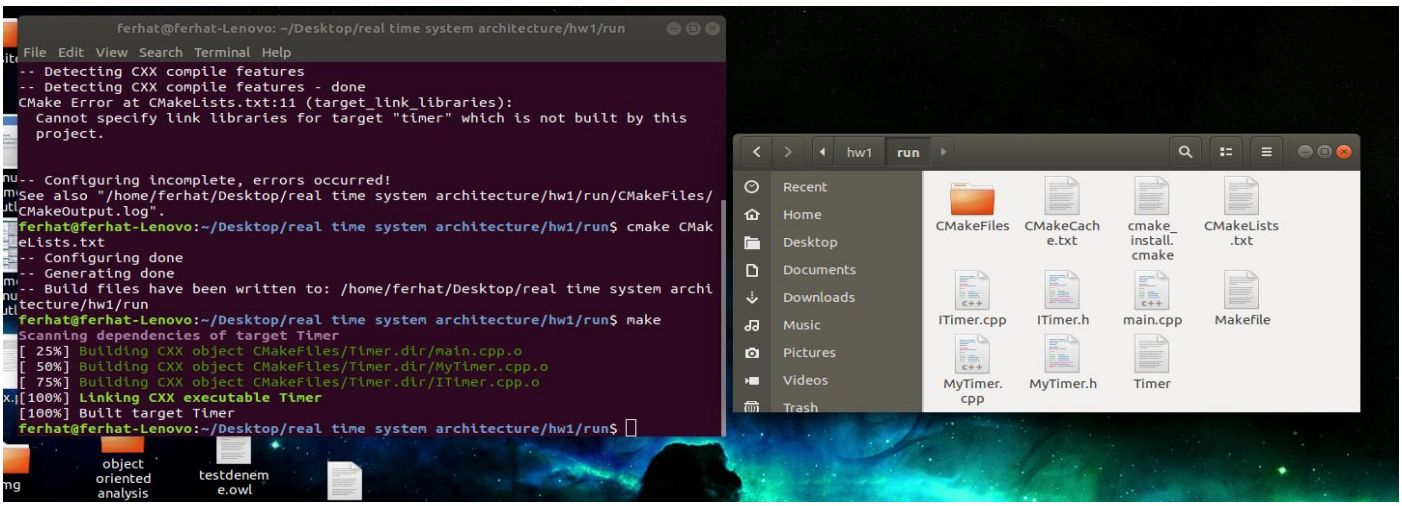
How to build and test project : 161044080

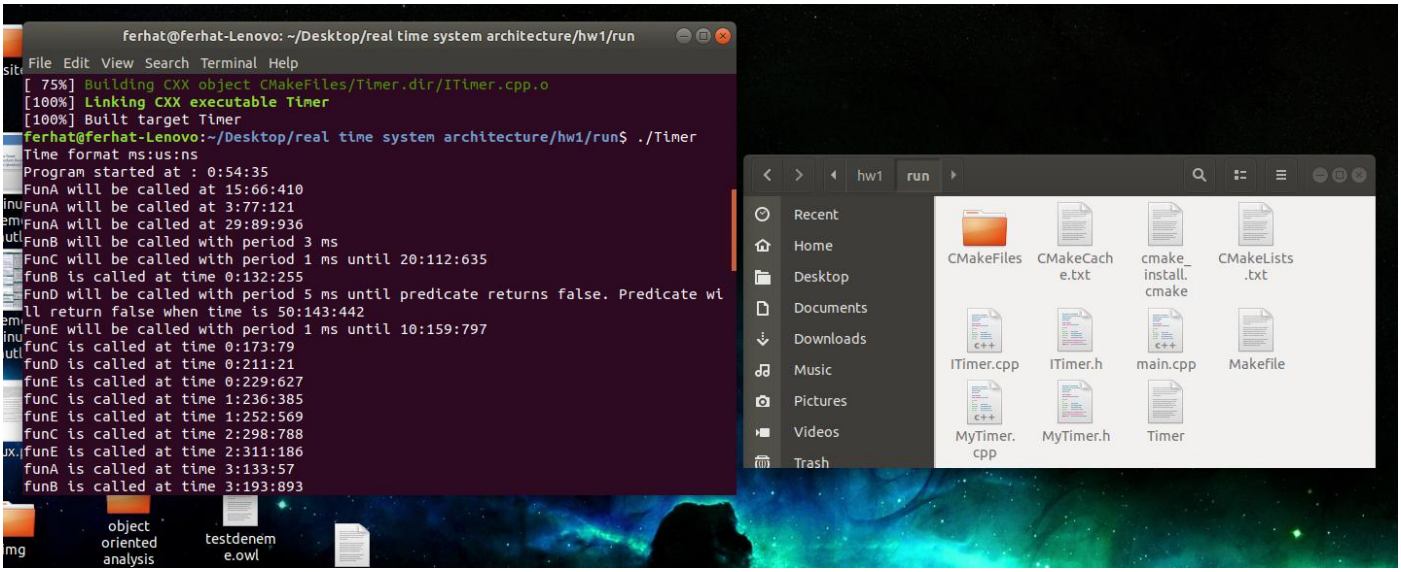
For Linux systems :



- Run “cmake CMakeLists.txt” command to create a makefile for the project.



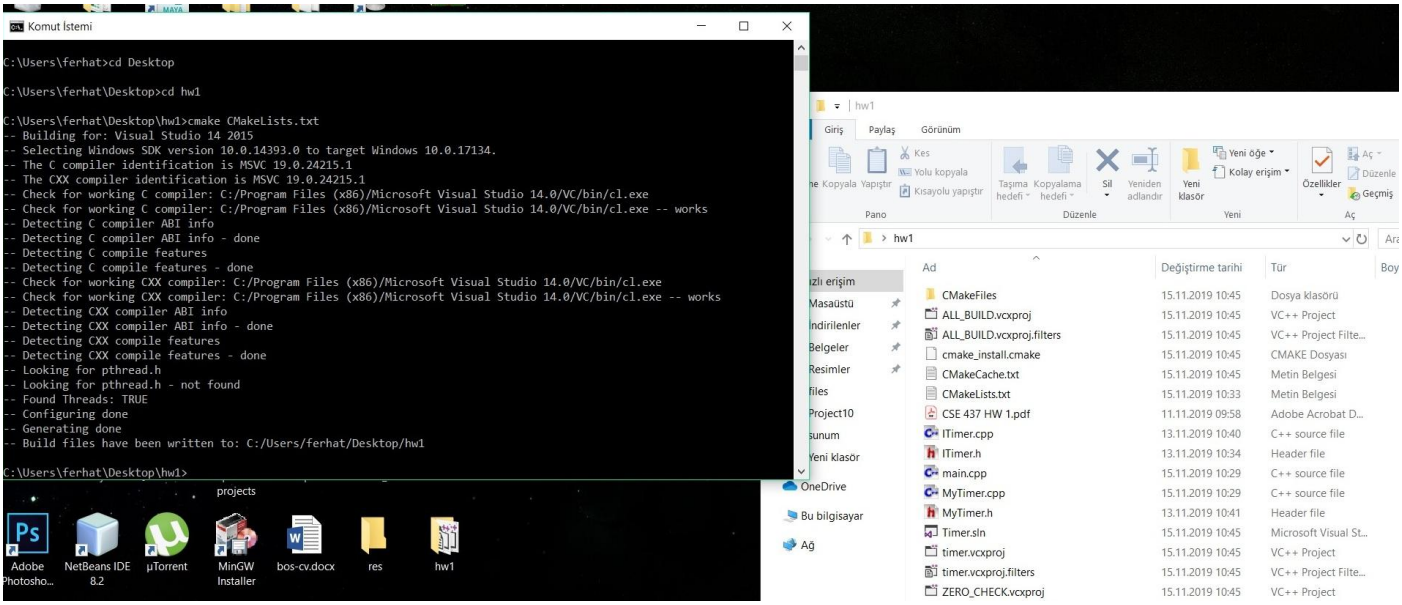
- Run “make” command to create executable file.



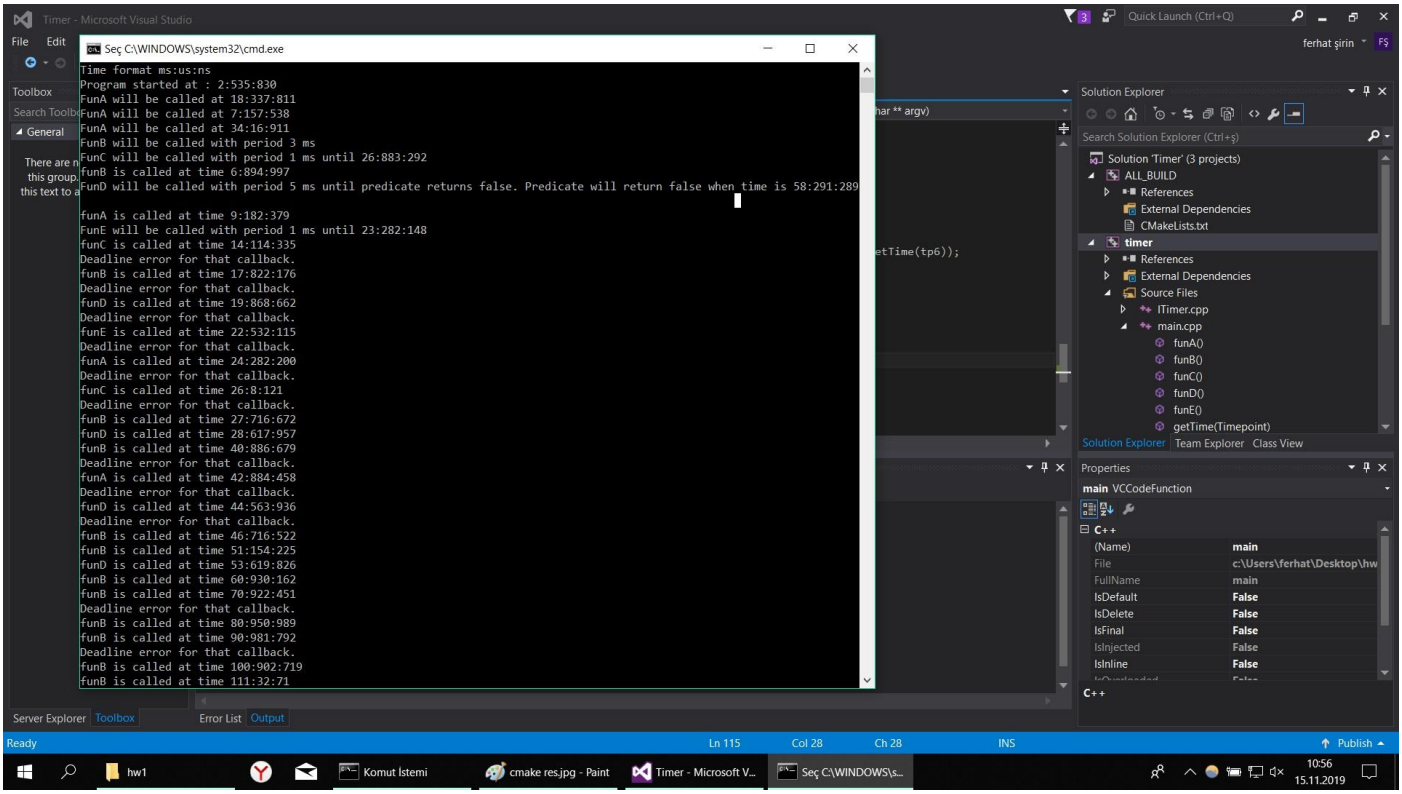
Run “./Timer” command to run program.

For Windows :

This part is only tested for Visiaul Studio C++ compiler.



- Run “cmake CMakeLists.txt” command to create Visual studio project.



After opening the project, Timer has to be set as Startup project then project can be executed.

Design of timer :

MyTimer class implements ITimer interface and its 4 registerTimer functions. When user calls registerTimer and saves a timer, this timer is hold in the list of struct Register of MyTimer. Struct Register holds timer's Timepoint, callback, period and its predicate function. Every added object is sorted with respect to their time point. When MyTimer object is created, a thread is started to run a special function called run. This function gets the first element of list and waits until its time is up. When time is up for that timer, if there exists a predicate, its predicate function is called and if predicate is true then callback is called. If there is a period for that timer then next call is set according to that period and timer is added to list back. If predicate returns false or there is not a prediod for that timer then timer is removed from the list.

When thread is in waiting for a timer and a new one is added, then thread wakes up and checks the new list and changes its time if new one is closer than the current one. List is used for the timer record because we remove the objects from front and add new records to the back and sort them. List's sort operation is NLogN which makes list a better option.

Thread holds the start time before calling a callback and checks the time point of that callback which indicates when callback should be called. If start time is bigger than time point + 5 ms then a deadline error is printed after callback is called.