Gem5 Installation

First I tried to get Gem5 works on Windows 10 using docker , it works but it was difficult to debug and it took more time because I'm not used to work with Docker that much.
The second platform I used the usual method, which using a fresh installed Linux distro for Gem5.
I installed Linux Mint 22.1 on my laptop as main OS , and I followed these steps to get Gem5 works.

1- Make sure the system is updated using these commands :
sudo apt update
sudo apt upgrade -y

2- Install Required Dependencies : Gem5 needs some software packages to build and work (Dependencies) . Install them using :

sudo apt install -y build-essential git m4 scons zlib1g zlib1g-dev libprotobuf-dev protobuf-compiler libprotoc-dev libgoogle-perftools-dev python3-dev python3-pip python-is-python3 git

3- Download Gem5 : get Gem5 source code using Git:

git clone https://github.com/gem5/gem5.git

Now we have gem5 directory and we can access using **cd gem5** .

There are two remained requirements to install "mypy and pre-commit" which are python library , we can install them using the command :
pip install -r requirements.txt

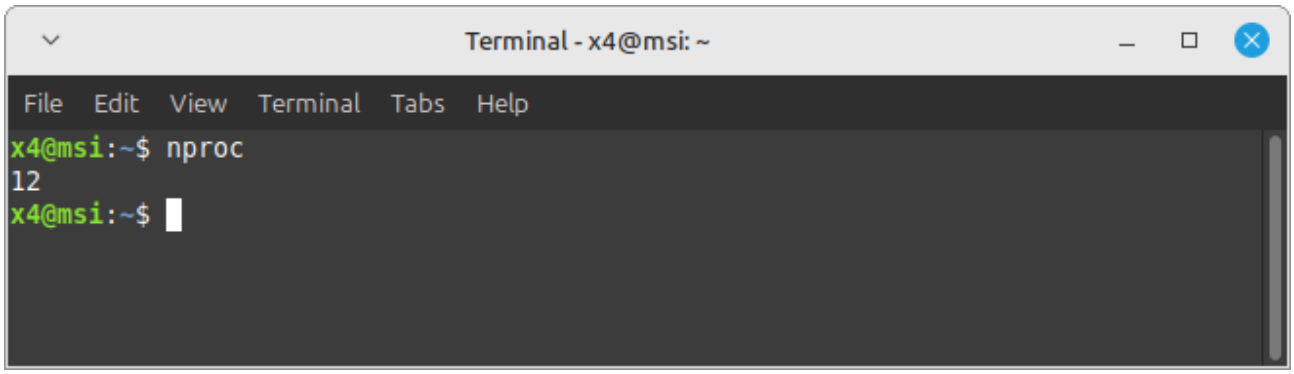
or by simply using apt :
sudo apt install python3-mypy pre-commit

- Building Gem5 using scons :

Gem5 directory includes all valid ISAs (Instruction Set Architectures) as followed :
ARM
NULL
MIPS
POWER
RISCV
SPARC
X86

Some of these ISAs have more than one type we can build , and we can use ALL to compiles Gem5 for all supported CPU architectures (X86, ARM, RISC-V, etc.). .

First : we use **nproc** command to display the number of available processing units. In my laptop I have 12 as shown.

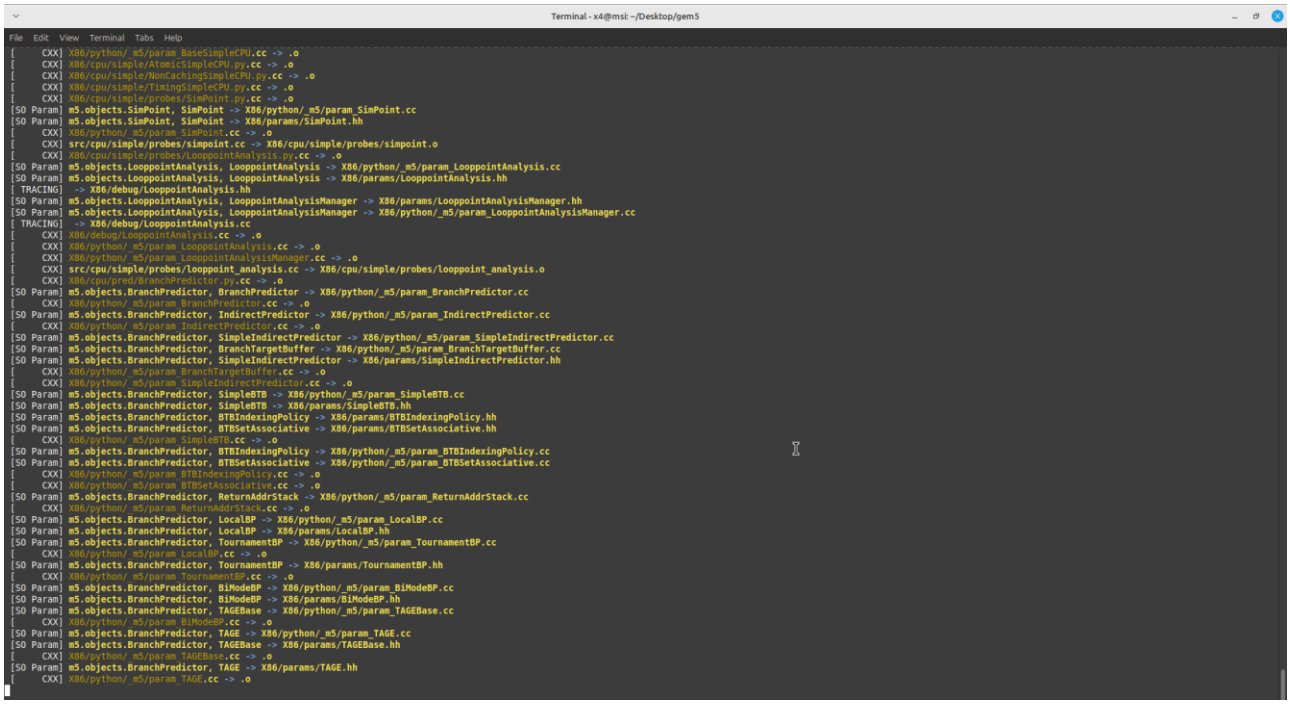


I have to use more than one core in building process to make it faster .
In gem5 directory I executed this command
scons build/[ISA]/gem5.opt –j [Number of cores]

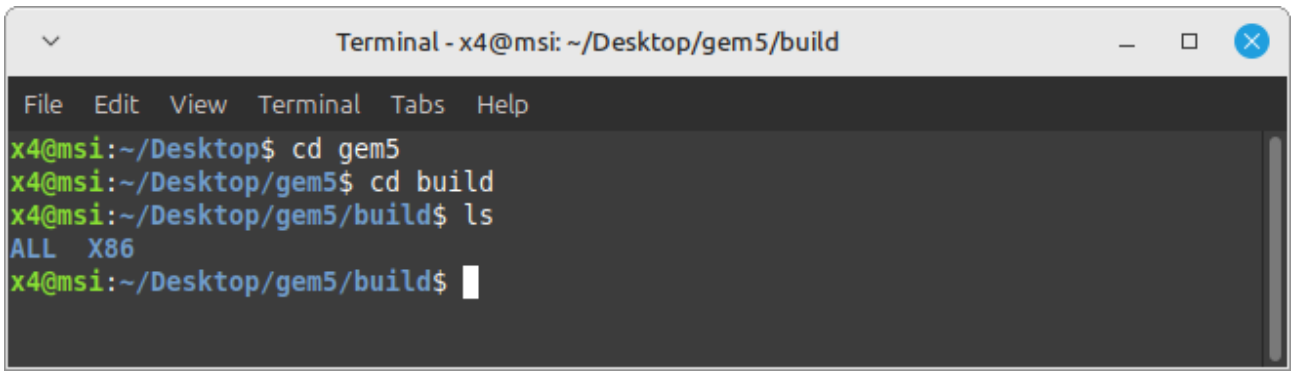
I tried to build ALL using 9 cores by this command :
scons build/ALL/gem5.opt –j 9

It took about 2 hours to complete , and after using Gem5 I build another platform for Intel/AMD only by using
scons build/X86/gem5.opt –j 9

It took about 30 minutes to complete.



We can see the compiled ISAs inside build sub-directory in Gem5.



By these steps we have Gem5 ready to use on our system.