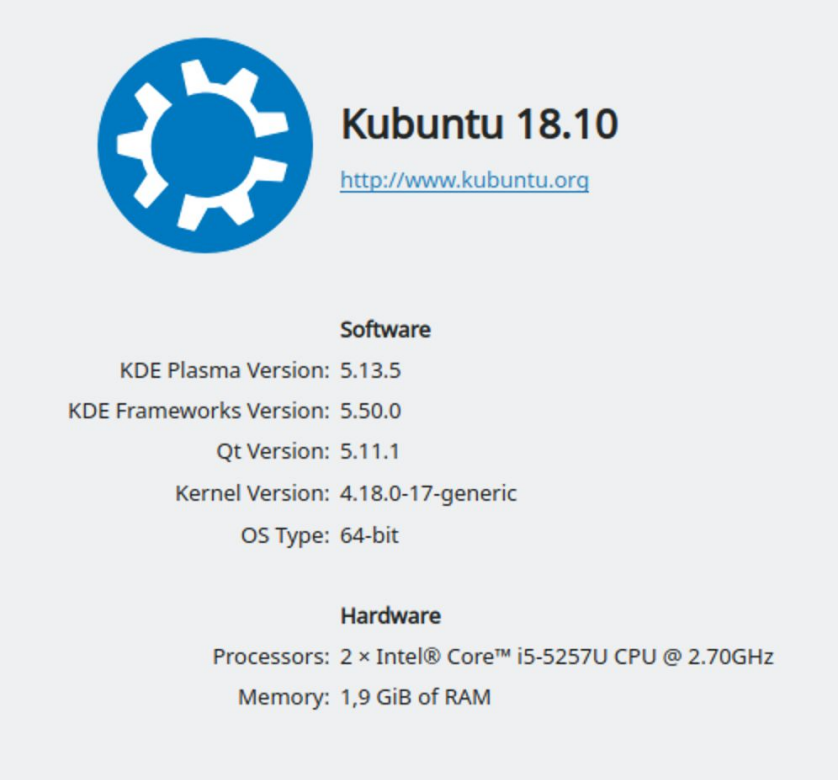
To run this project, you will need Linux 64 bit OS, it was created and tested with Kubuntu 18.10 with the following hardware:



This project was made possible with the SASM IDE using x86_64 architecture.
SASM IDE requires the following dependencies been installed priorly:

1. NASM assembler
2. gcc-multilib

Above dependencies can be easily installed with apt-get. Follow the given bellow steps:

1. sudo apt-get update
2. sudo apt-get -f install
3. sudo apt-get install nasm
4. sudo apt-get install gcc-multilib

Then download the .deb distribution with the following command:

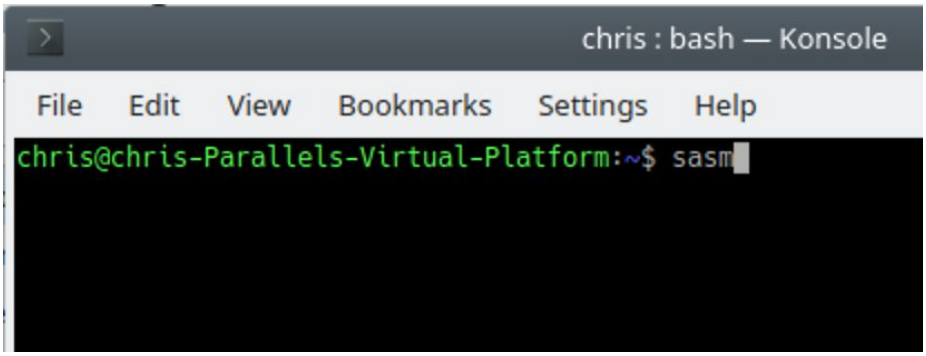
wget http://download.opensuse.org/repositories/home:/Dman95/xUbuntu_18.04/amd64/sasm_3.10.1_amd64.deb

then install the debian package with dpkg using the following command:

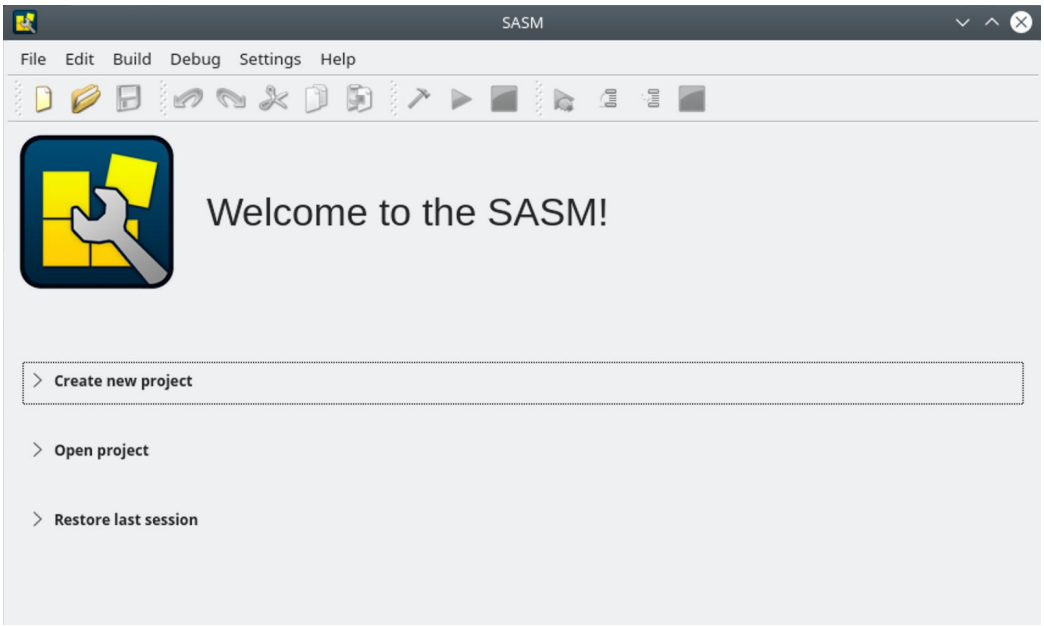
sudo dpkg -i asm_3.10.1_amd64.deb

Once the installation is completed, run the following command to start the IDE:

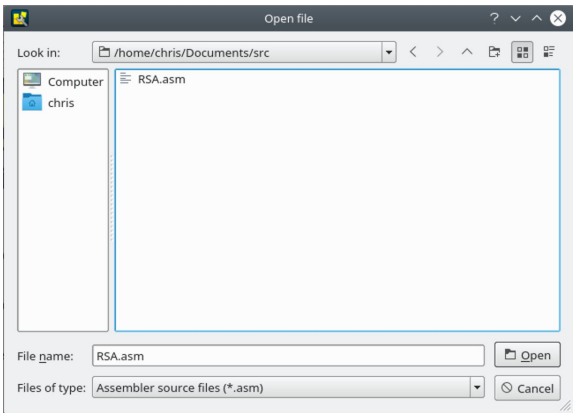
sasm



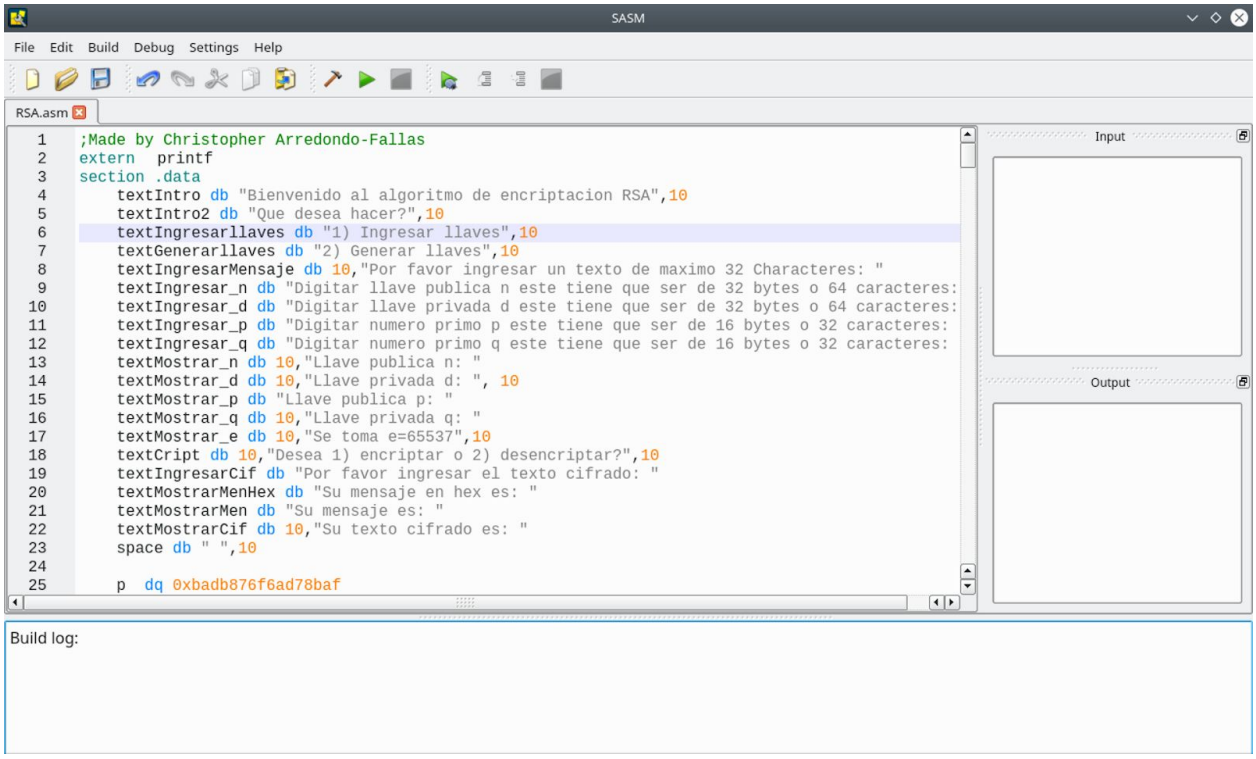
The following window should appear:



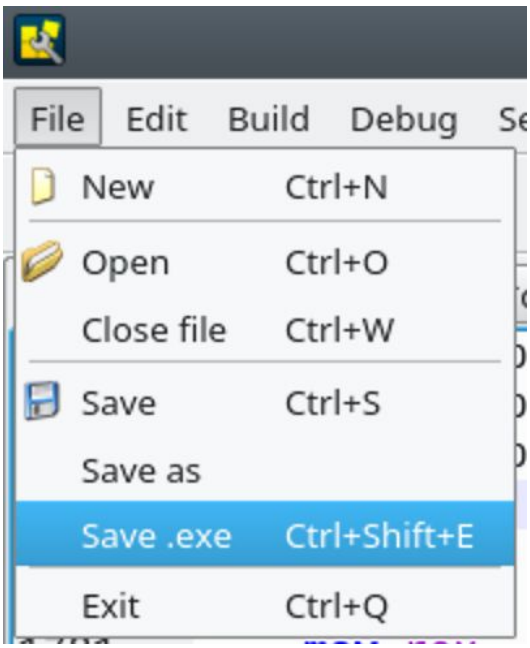
After that look for the project file name RSA.asm in the folder src and open it with the open project button.



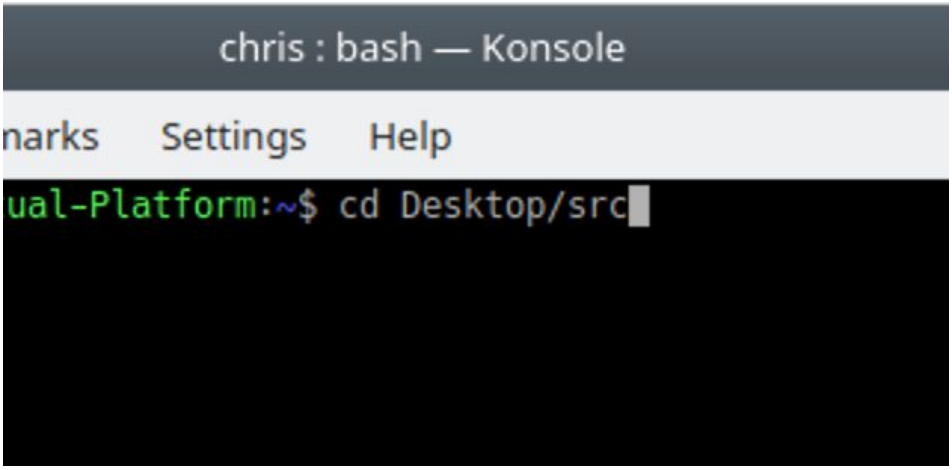
You should see the following screen:



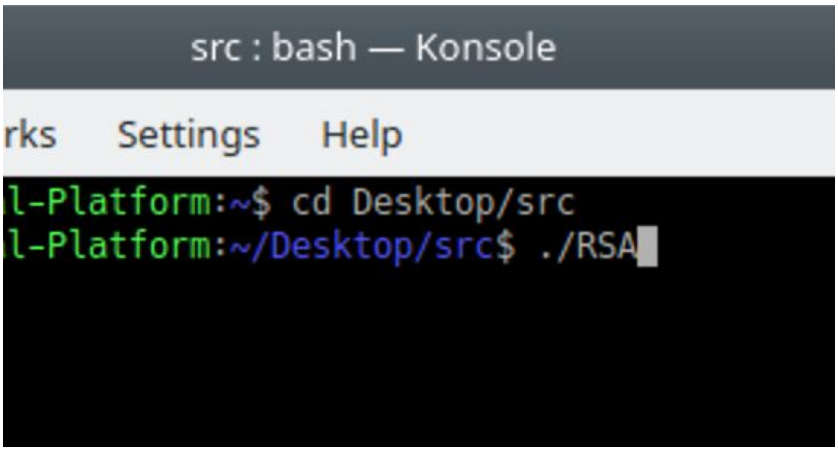
If you want to save as a executable, go to file > save as .exe, and pick the src folder



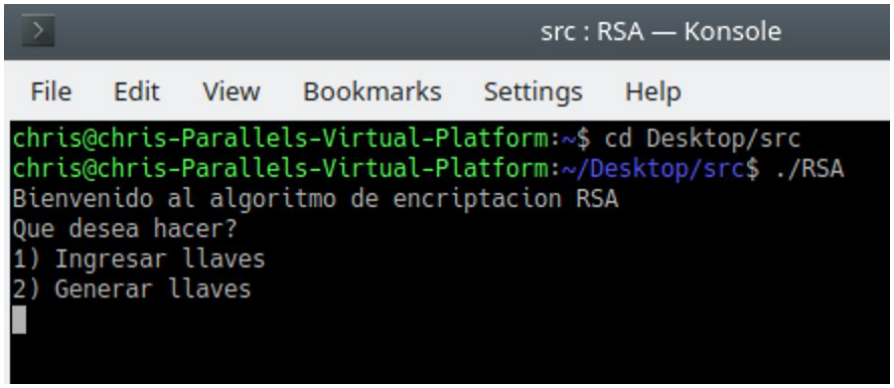
To run the program, put the src file in your desktop and run:



After that, run:



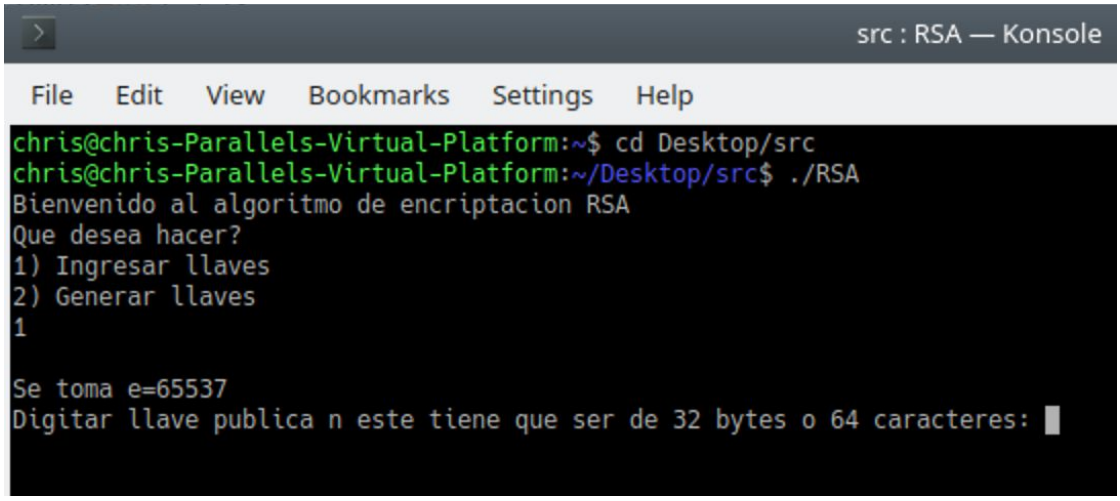
After that you will see the following menu:



You see two options:

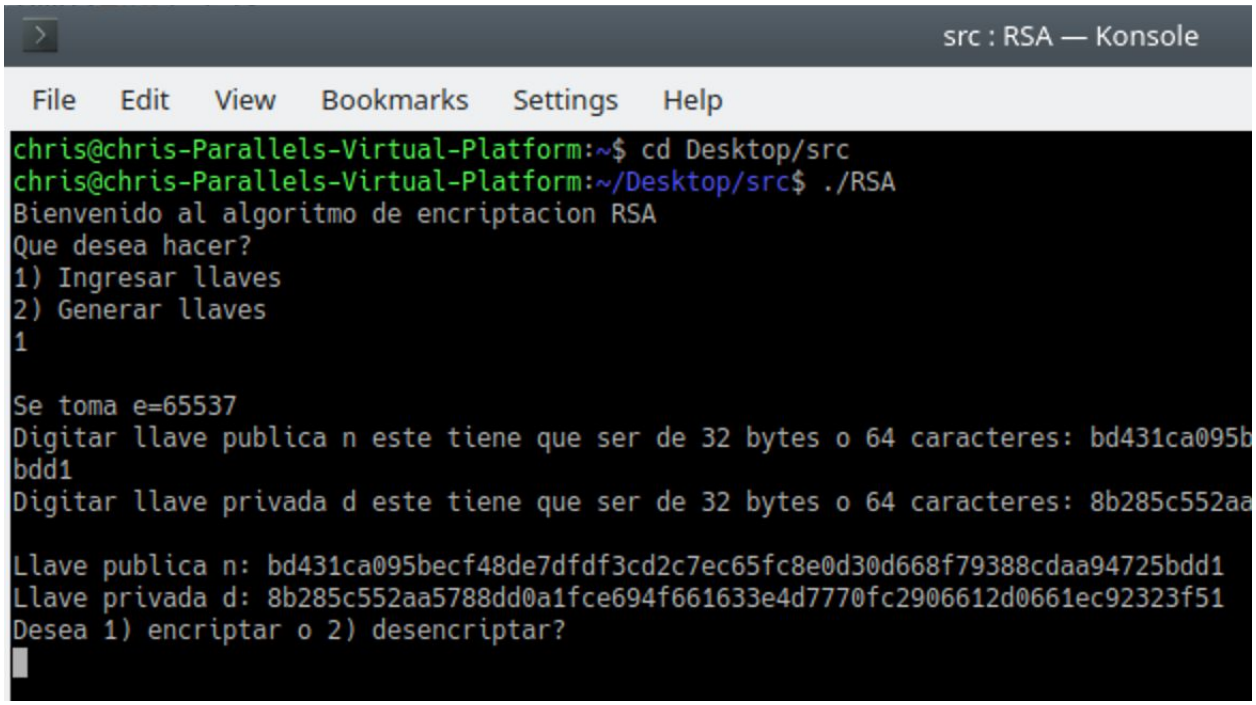
- Insert keys (n,d)
- Generate keys from prime numbers (p,q)

If you decide to Insert Keys, you will see the next screen:



After that, all you have to do is insert the key of your election, you can obtain keys from the following page:
https://www.mobilefish.com/services/rsa_key_generation/rsa_key_generation.php
In this case I used:

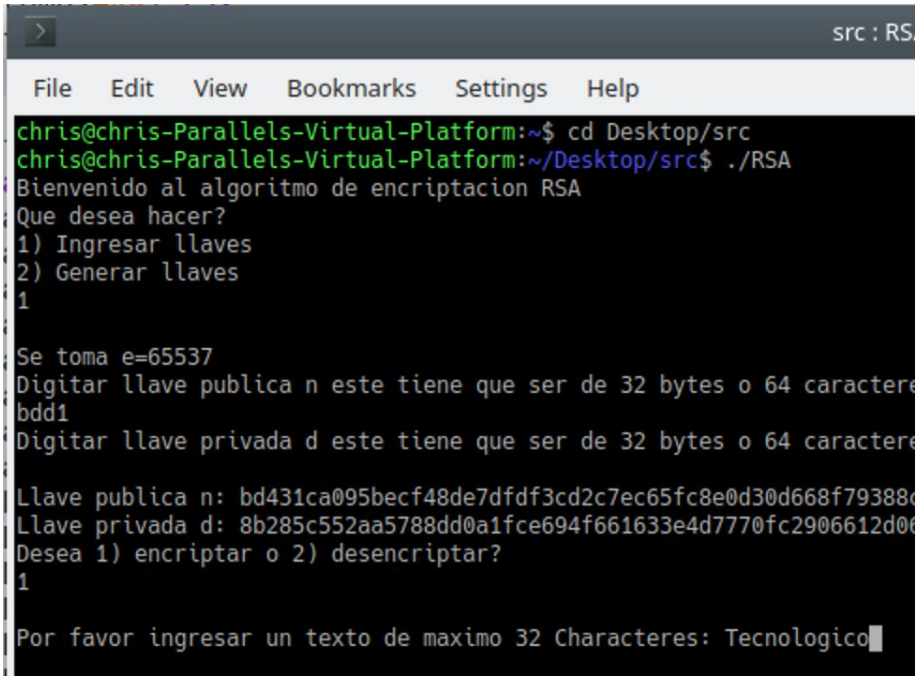
- n = bd431ca095becf48de7dfdf3cd2c7ec65fc8e0d30d668f79388cdaa94725bdd1
- d = 8b285c552aa5788dd0a1fce694f661633e4d7770fc2906612d0661ec92323f51



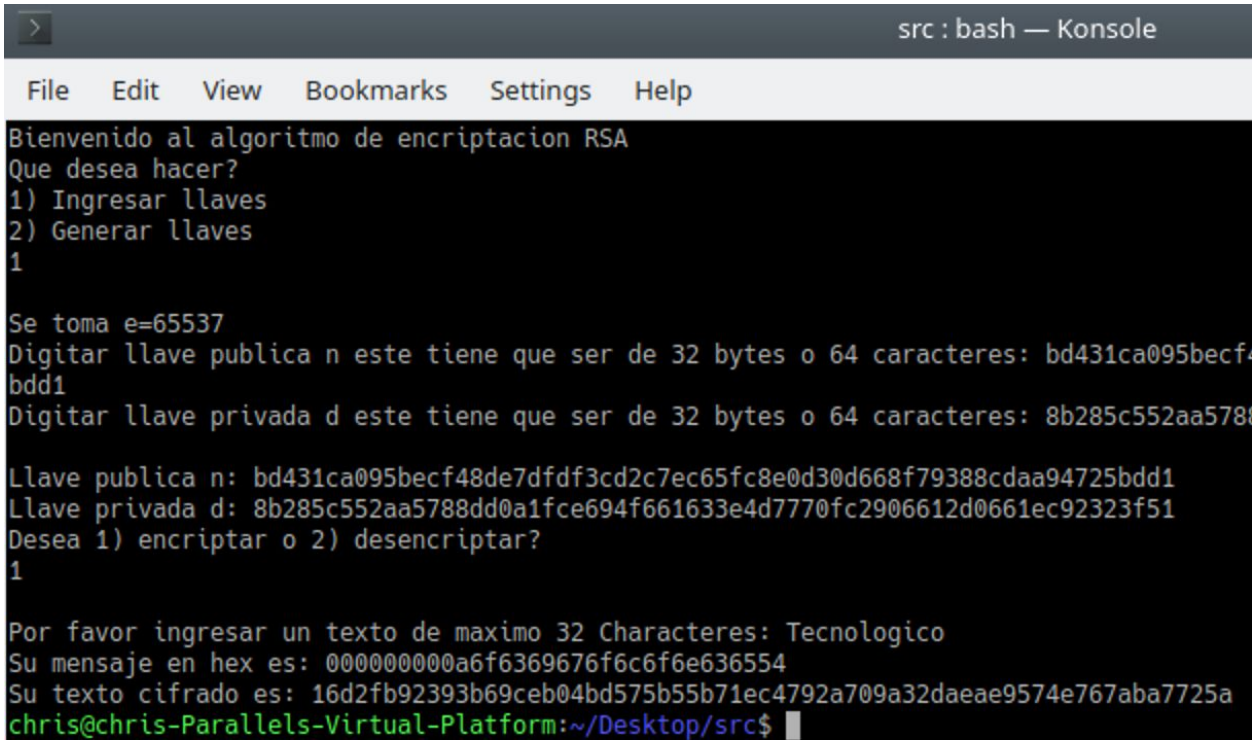
After that you have two options

- Encrypt
- Decrypt

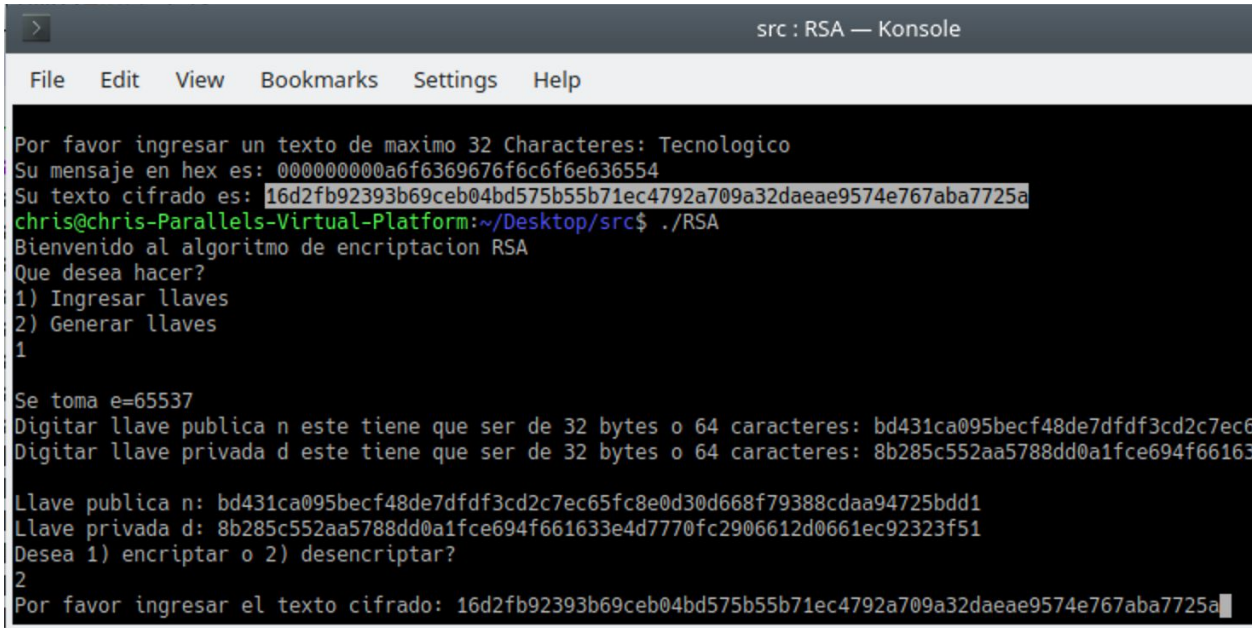
If you pick Encrypt:



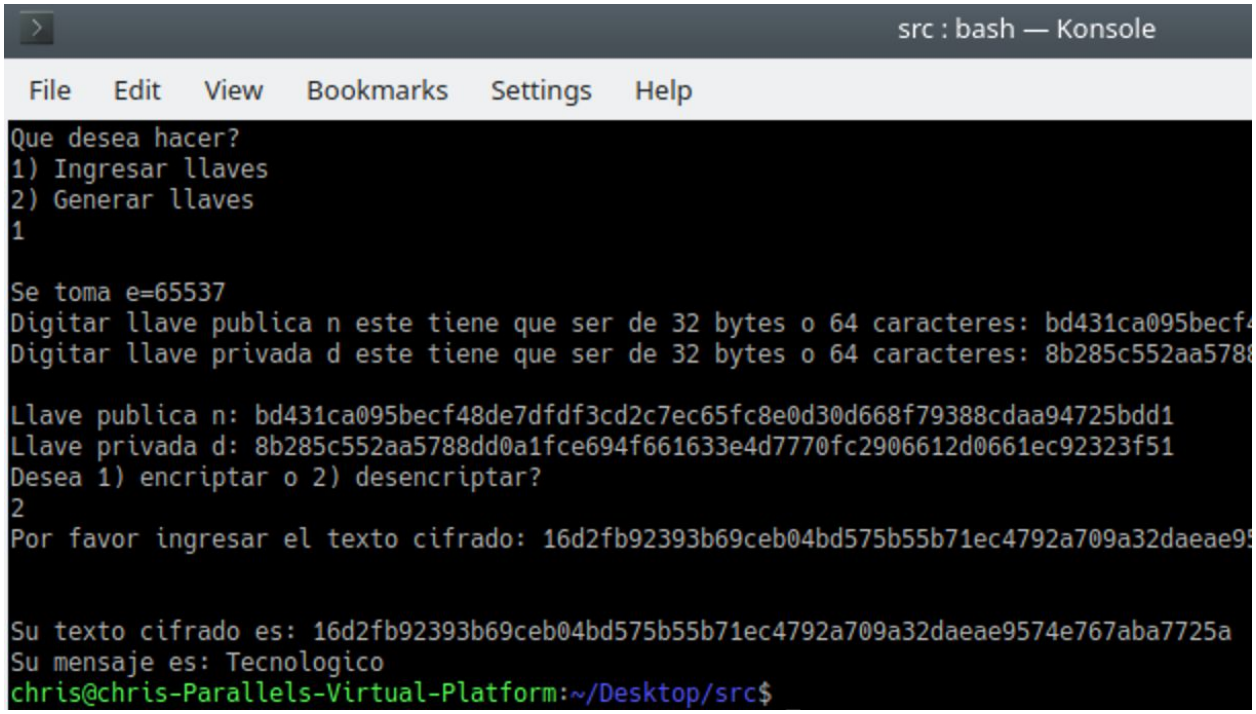
You have the option of entering a word of maximum 32 letters or 256 bits
After that you will receive your ciphered text:



You will get your ciphered text.
If you pick decrypt:



You can enter the ciphered text obtained in the previous iteration.



Finally you will obtained the decrypted text.

If you pick Generate keys you will be asked to enter prime numbers(p,q) and then you will get the same menu as explained before.

```
chris@chris-Parallels-Virtual-Platform:~/Desktop/src$ ./RSA
Bienvenido al algoritmo de encriptacion RSA
Que desea hacer?
1) Ingresar llaves
2) Generar llaves
2

Se toma e=65537
Digitar numero primo p este tiene que ser de 16 bytes o 32 caracteres: fa5085d90131fd4b0adfe6b2ca2d8f6d
Digitar numero primo q este tiene que ser de 16 bytes o 32 caracteres: c18f981e1324c357aaff6a7e4a045575
Llave publica p: fa5085d90131fd4b0adfe6b2ca2d8f6d
Llave privada q: c18f981e1324c357aaff6a7e4a045575
Llave publica n: bd431ca095becf48de7dfdf3cd2c7ec65fc8e0d30d668f79388cdaa94725bdd1
Llave privada d: 8b285c552aa5788dd0a1fce694f661633e4d7770fc2906612d0661ec92323f51
Desea 1) encriptar o 2) desencriptar?
```