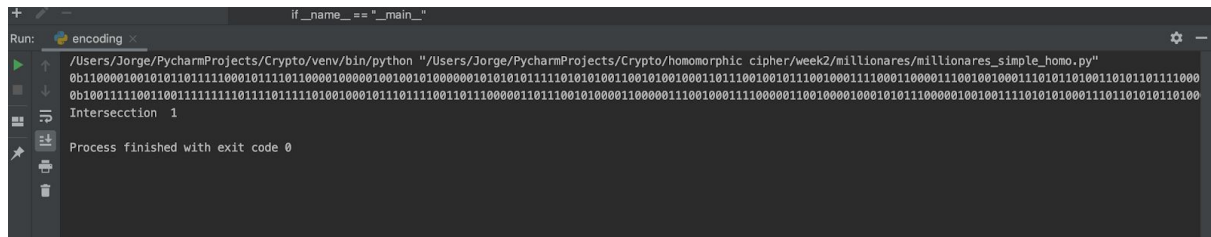


We re doing all the operations on the same main code , but we should consider Alice receiving the ciphered text from bob. Once Alice got it, she can perform homomorphic encryption on their number. Once we have both, we perform zero and one encoding. So we encode Alice or x into 1 and bob or y into 0. After that, we intersect so we can see  $x > y$  if there is at least one common element. This information has been read on

[https://link.springer.com/content/pdf/10.1007%2F11496137\\_31.pdf](https://link.springer.com/content/pdf/10.1007%2F11496137_31.pdf)



```
if __name__ == "__main__":  
    encoding  
    /Users/Jorge/PycharmProjects/Crypto/venv/bin/python "/Users/Jorge/PycharmProjects/Crypto/homomorphic cipher/week2/millionaires/millionaires_simple_homo.py"  
    0b1100001001011011111000101110110000100000100100100000010101011110101001100101001000110111001001110010001110001100001110010011010110100110111000  
    0b10011111001100111111011110111010010001011011100110111000001101100101000011001000111001000110010000100111000001001001110101010001101010100  
    Intersection 1  
    Process finished with exit code 0
```

So Alice number is bigger than bobs.