# Primos

- ***Código***

```
def primo(n):
        cnt=0
        for i in 2,(n**0.5):
                cnt=cnt+1
                if ((n%i)==0):
                        #return("no es primo")
                        break
                #return("si es primo")
                return cnt


def primo(n):
        cnt=0
        for i in range(2,round(n**0.5)):
                cnt=cnt+1
                if ((n%i)==0):
                        break
        return cnt

for w in range(1,10000,50):
    print(w,primo(w))
```

- ***Tabla***

| Columna1 | Columna2 |
|---|---|
| 1 | 0 |
| 51 | 2 |
| 101 | 8 |
| 151 | 10 |
| 201 | 2 |
| 251 | 14 |
| 301 | 6 |
| 351 | 2 |
| 401 | 18 |
| 451 | 10 |
| 501 | 2 |
| 551 | 18 |
| 601 | 23 |
| 651 | 2 |
| 701 | 24 |
| 751 | 25 |
| 801 | 2 |
| 851 | 22 |
| 901 | 16 |

| | |
|---|---|
| 951 | 2 |
| 1001 | 6 |
| 1051 | 30 |
| 1101 | 2 |
| 1151 | 32 |
| 1201 | 33 |
| 1251 | 2 |
| 1301 | 34 |
| 1351 | 6 |
| 1401 | 2 |
| 1451 | 36 |
| 1501 | 18 |
| 1551 | 2 |
| 1601 | 38 |
| 1651 | 12 |
| 1701 | 2 |
| 1751 | 16 |
| 1801 | 40 |
| 1851 | 2 |
| 1901 | 42 |
| 1951 | 42 |
| 2001 | 2 |
| 2051 | 6 |
| 2101 | 10 |
| 2151 | 2 |
| 2201 | 30 |
| 2251 | 45 |
| 2301 | 2 |
| 2351 | 46 |
| 2401 | 6 |
| 2451 | 2 |
| 2501 | 40 |
| 2551 | 49 |
| 2601 | 2 |
| 2651 | 10 |
| 2701 | 36 |
| 2751 | 2 |
| 2801 | 51 |
| 2851 | 51 |
| 2901 | 2 |
| 2951 | 12 |

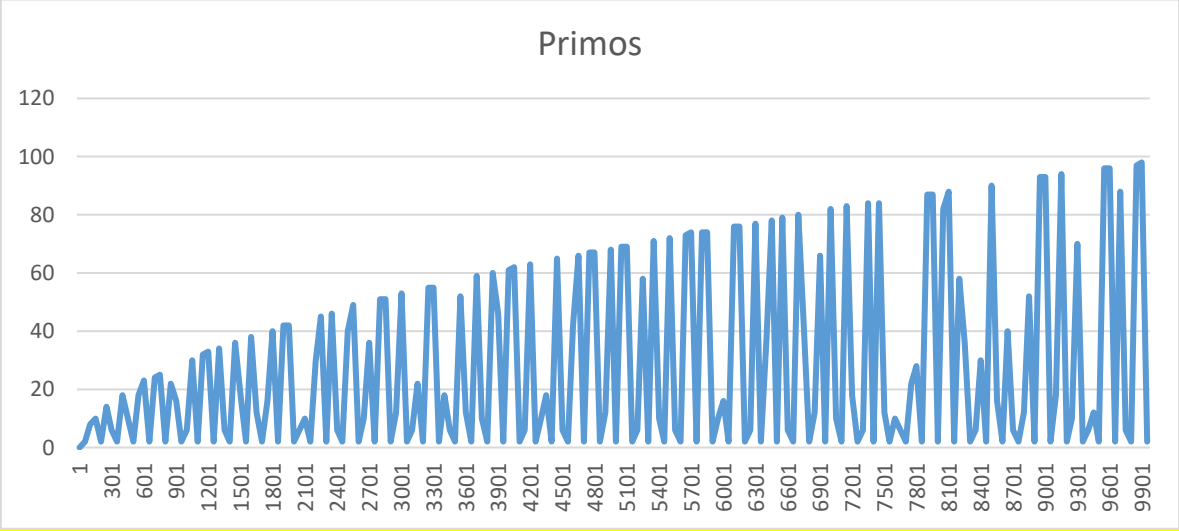
| | |
|---|---|
| 3001 | 53 |
| 3051 | 2 |
| 3101 | 6 |
| 3151 | 22 |
| 3201 | 2 |
| 3251 | 55 |
| 3301 | 55 |
| 3351 | 2 |
| 3401 | 18 |
| 3451 | 6 |
| 3501 | 2 |
| 3551 | 52 |
| 3601 | 12 |
| 3651 | 2 |
| 3701 | 59 |
| 3751 | 10 |
| 3801 | 2 |
| 3851 | 60 |
| 3901 | 46 |
| 3951 | 2 |
| 4001 | 61 |
| 4051 | 62 |
| 4101 | 2 |
| 4151 | 6 |
| 4201 | 63 |
| 4251 | 2 |
| 4301 | 10 |
| 4351 | 18 |
| 4401 | 2 |
| 4451 | 65 |
| 4501 | 6 |
| 4551 | 2 |
| 4601 | 42 |
| 4651 | 66 |
| 4701 | 2 |
| 4751 | 67 |
| 4801 | 67 |
| 4851 | 2 |
| 4901 | 12 |
| 4951 | 68 |
| 5001 | 2 |

| | |
|---|---|
| 5051 | 69 |
| 5101 | 69 |
| 5151 | 2 |
| 5201 | 6 |
| 5251 | 58 |
| 5301 | 2 |
| 5351 | 71 |
| 5401 | 10 |
| 5451 | 2 |
| 5501 | 72 |
| 5551 | 6 |
| 5601 | 2 |
| 5651 | 73 |
| 5701 | 74 |
| 5751 | 2 |
| 5801 | 74 |
| 5851 | 74 |
| 5901 | 2 |
| 5951 | 10 |
| 6001 | 16 |
| 6051 | 2 |
| 6101 | 76 |
| 6151 | 76 |
| 6201 | 2 |
| 6251 | 6 |
| 6301 | 77 |
| 6351 | 2 |
| 6401 | 36 |
| 6451 | 78 |
| 6501 | 2 |
| 6551 | 79 |
| 6601 | 6 |
| 6651 | 2 |
| 6701 | 80 |
| 6751 | 42 |
| 6801 | 2 |
| 6851 | 12 |
| 6901 | 66 |
| 6951 | 2 |
| 7001 | 82 |
| 7051 | 10 |

| | |
|---|---|
| 7101 | 2 |
| 7151 | 83 |
| 7201 | 18 |
| 7251 | 2 |
| 7301 | 6 |
| 7351 | 84 |
| 7401 | 2 |
| 7451 | 84 |
| 7501 | 12 |
| 7551 | 2 |
| 7601 | 10 |
| 7651 | 6 |
| 7701 | 2 |
| 7751 | 22 |
| 7801 | 28 |
| 7851 | 2 |
| 7901 | 87 |
| 7951 | 87 |
| 8001 | 2 |
| 8051 | 82 |
| 8101 | 88 |
| 8151 | 2 |
| 8201 | 58 |
| 8251 | 36 |
| 8301 | 2 |
| 8351 | 6 |
| 8401 | 30 |
| 8451 | 2 |
| 8501 | 90 |
| 8551 | 16 |
| 8601 | 2 |
| 8651 | 40 |
| 8701 | 6 |
| 8751 | 2 |
| 8801 | 12 |
| 8851 | 52 |
| 8901 | 2 |
| 8951 | 93 |
| 9001 | 93 |
| 9051 | 2 |
| 9101 | 18 |

| | |
|---|---|
| 9151 | 94 |
| 9201 | 2 |
| 9251 | 10 |
| 9301 | 70 |
| 9351 | 2 |
| 9401 | 6 |
| 9451 | 12 |
| 9501 | 2 |
| 9551 | 96 |
| 9601 | 96 |
| 9651 | 2 |
| 9701 | 88 |
| 9751 | 6 |
| 9801 | 2 |
| 9851 | 97 |
| 9901 | 98 |
| 9951 | 2 |

***Grafica***



## Algoritmo recursivo

- **código**

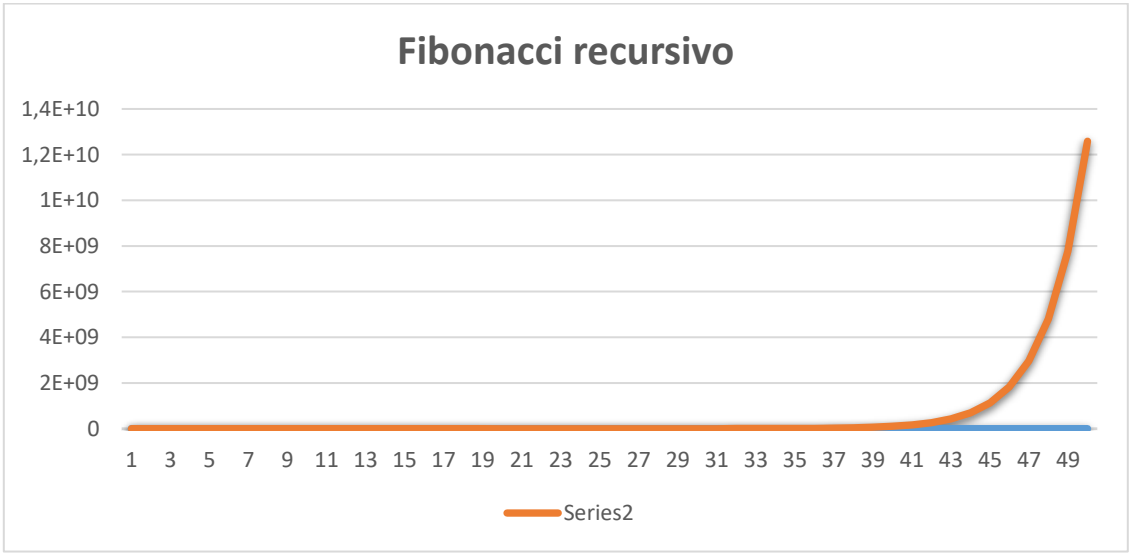
```
ley = {0: 0, 1: 1}#Declaracion de los primeros elementos
def fib(x):
    if x not in ley:#Proceso
        ley[x] = fib(x- 1) + fib(x - 2)
    return ley[x]
for w in range(1,51):#Rango a valorar
    print(w,fib(w))#Imprime valor de ( x) y su posicion
```

- **Tabla**

| Columna1 | Columna2 |
|---|---|
| 1 | 1 |
| 2 | 1 |
| 3 | 2 |
| 4 | 3 |
| 5 | 5 |
| 6 | 8 |
| 7 | 13 |
| 8 | 21 |
| 9 | 34 |
| 10 | 55 |
| 11 | 89 |
| 12 | 144 |
| 13 | 233 |
| 14 | 377 |
| 15 | 610 |
| 16 | 987 |
| 17 | 1597 |
| 18 | 2584 |
| 19 | 4181 |
| 20 | 6765 |
| 21 | 10946 |
| 22 | 17711 |
| 23 | 28657 |
| 24 | 46368 |
| 25 | 75025 |
| 26 | 121393 |
| 27 | 196418 |
| 28 | 317811 |

| | |
|---|---|
| 29 | 514229 |
| 30 | 832040 |
| 31 | 1346269 |
| 32 | 2178309 |
| 33 | 3524578 |
| 34 | 5702887 |
| 35 | 9227465 |
| 36 | 14930352 |
| 37 | 24157817 |
| 38 | 39088169 |
| 39 | 63245986 |
| 40 | 102334155 |
| 41 | 165580141 |
| 42 | 267914296 |
| 43 | 433494437 |
| 44 | 701408733 |
| 45 | 1134903170 |
| 46 | 1836311903 |
| 47 | 2971215073 |
| 48 | 4807526976 |
| 49 | 7778742049 |
| 50 | 12586269025 |

**Grafica**



## Algoritmo iterativo

### código

```
def fiboiter(n):
    global cnt
    fib=[1,1]
    for k in range(2,n+1):
        cnt+=1
        fib.append(fib[k-1]+fib[k-2])
    return fib[n]

for n in range(0,101):
    cnt=0
    a=fiboiter(n)
    cntr,cnt=cnt,0
    print(n,fiboiter(n))
```

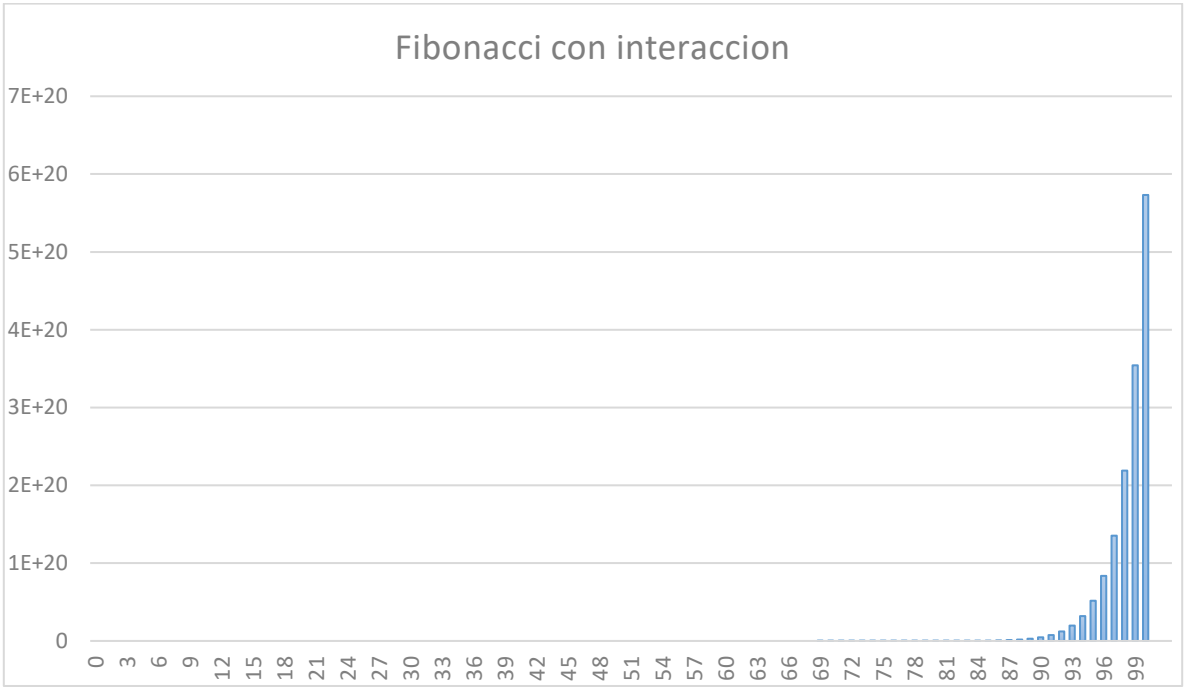
### tabla

| Columna1 | Columna2 |
|---|---|
| **0** | 1 |
| **1** | 1 |
| **2** | 2 |
| **3** | 3 |
| **4** | 5 |
| **5** | 8 |
| **6** | 13 |
| **7** | 21 |
| **8** | 34 |
| **9** | 55 |
| **10** | 89 |
| **11** | 144 |
| **12** | 233 |
| **13** | 377 |
| **14** | 610 |
| **15** | 987 |
| **16** | 1597 |
| **17** | 2584 |
| **18** | 4181 |
| **19** | 6765 |
| **20** | 10946 |
| **21** | 17711 |
| **22** | 28657 |
| **23** | 46368 |

| | |
|---|---|
| **24** | 75025 |
| **25** | 121393 |
| **26** | 196418 |
| **27** | 317811 |
| **28** | 514229 |
| **29** | 832040 |
| **30** | 1346269 |
| **31** | 2178309 |
| **32** | 3524578 |
| **33** | 5702887 |
| **34** | 9227465 |
| **35** | 14930352 |
| **36** | 24157817 |
| **37** | 39088169 |
| **38** | 63245986 |
| **39** | 102334155 |
| **40** | 165580141 |
| **41** | 267914296 |
| **42** | 433494437 |
| **43** | 701408733 |
| **44** | 1134903170 |
| **45** | 1836311903 |
| **46** | 2971215073 |
| **47** | 4807526976 |
| **48** | 7778742049 |
| **49** | 1,2586E+10 |
| **50** | 2,0365E+10 |
| **51** | 3,2951E+10 |
| **52** | 5,3316E+10 |
| **53** | 8,6268E+10 |
| **54** | 1,3958E+11 |
| **55** | 2,2585E+11 |
| **56** | 3,6544E+11 |
| **57** | 5,9129E+11 |
| **58** | 9,5672E+11 |
| **59** | 1,548E+12 |
| **60** | 2,5047E+12 |
| **61** | 4,0527E+12 |
| **62** | 6,5575E+12 |
| **63** | 1,061E+13 |
| **64** | 1,7168E+13 |

| | |
|---|---|
| **65** | 2,7778E+13 |
| **66** | 4,4946E+13 |
| **67** | 7,2723E+13 |
| **68** | 1,1767E+14 |
| **69** | 1,9039E+14 |
| **70** | 3,0806E+14 |
| **71** | 4,9845E+14 |
| **72** | 8,0652E+14 |
| **73** | 1,305E+15 |
| **74** | 2,1115E+15 |
| **75** | 3,4165E+15 |
| **76** | 5,5279E+15 |
| **77** | 8,9444E+15 |
| **78** | 1,4472E+16 |
| **79** | 2,3417E+16 |
| **80** | 3,7889E+16 |
| **81** | 6,1306E+16 |
| **82** | 9,9195E+16 |
| **83** | 1,605E+17 |
| **84** | 2,597E+17 |
| **85** | 4,202E+17 |
| **86** | 6,7989E+17 |
| **87** | 1,1001E+18 |
| **88** | 1,78E+18 |
| **89** | 2,8801E+18 |
| **90** | 4,66E+18 |
| **91** | 7,5401E+18 |
| **92** | 1,22E+19 |
| **93** | 1,974E+19 |
| **94** | 3,194E+19 |
| **95** | 5,1681E+19 |
| **96** | 8,3621E+19 |
| **97** | 1,353E+20 |
| **98** | 2,1892E+20 |
| **99** | 3,5422E+20 |
| **100** | 5,7315E+20 |
| | |

- **Grafica**




## Algoritmo de recursión con memoria

- **Código**

```
global contador
contador = 0
cache = {0: 0, 1: 1}

def fib(m):
    global contador
    contador = contador +1
    if m not in cache:
        cache[m] = fib(m - 1) + fib(m - 2)
    return cache[m]

y=[]
e=[]
for i in range(1,100):
    y.append(i)
    contador=0
    cache = {0: 0, 1: 1}
    fib(i)
    e.append(contador)
```

**Tabla**

| Columna1 | Columna2 |
|---|---|
| 1 | 1 |
| 2 | 3 |
| 3 | 5 |
| 4 | 7 |
| 5 | 9 |
| 6 | 11 |
| 7 | 13 |
| 8 | 15 |
| 9 | 17 |
| 10 | 19 |
| 11 | 21 |
| 12 | 23 |
| 13 | 25 |
| 14 | 27 |
| 15 | 29 |
| 16 | 31 |
| 17 | 33 |
| 18 | 35 |
| 19 | 37 |
| 20 | 39 |
| 21 | 41 |
| 22 | 43 |
| 23 | 45 |
| 24 | 47 |
| 25 | 49 |
| 26 | 51 |
| 27 | 53 |
| 28 | 55 |
| 29 | 57 |
| 30 | 59 |
| 31 | 61 |
| 32 | 63 |
| 33 | 65 |
| 34 | 67 |
| 35 | 69 |
| 36 | 71 |
| 37 | 73 |
| 38 | 75 |
| 39 | 77 |

| | |
|---|---|
| 40 | 79 |
| 41 | 81 |
| 42 | 83 |
| 43 | 85 |
| 44 | 87 |
| 45 | 89 |
| 46 | 91 |
| 47 | 93 |
| 48 | 95 |
| 49 | 97 |
| 50 | 99 |
| 51 | 101 |
| 52 | 103 |
| 53 | 105 |
| 54 | 107 |
| 55 | 109 |
| 56 | 111 |
| 57 | 113 |
| 58 | 115 |
| 59 | 117 |
| 60 | 119 |
| 61 | 121 |
| 62 | 123 |
| 63 | 125 |
| 64 | 127 |
| 65 | 129 |
| 66 | 131 |
| 67 | 133 |
| 68 | 135 |
| 69 | 137 |
| 70 | 139 |
| 71 | 141 |
| 72 | 143 |
| 73 | 145 |
| 74 | 147 |
| 75 | 149 |
| 76 | 151 |
| 77 | 153 |
| 78 | 155 |
| 79 | 157 |
| 80 | 159 |

| | |
|---|---|
| 81 | 161 |
| 82 | 163 |
| 83 | 165 |
| 84 | 167 |
| 85 | 169 |
| 86 | 171 |
| 87 | 173 |
| 88 | 175 |
| 89 | 177 |
| 90 | 179 |
| 91 | 181 |
| 92 | 183 |
| 93 | 185 |
| 94 | 187 |
| 95 | 189 |
| 96 | 191 |
| 97 | 193 |
| 98 | 195 |
| 99 | 197 |

**Grafica**