

Спочатку збільшуємо N в **геометричній** прогресії.

N = 10:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 10

Time using BIN
Writing time: 0
Reading time: 0
Time adding products: 0
Time searching name: 0
Time searching quantity: 0
Time searching date: 0
Time searching all: 0
Duration: 1

Time using TXT
Writing time: 0
Reading time: 0
Time adding products: 0
Time searching name: 0
Time searching quantity: 0
Time searching date: 0
Time searching all: 0
Duration: 0

Time using VECTOR
Time adding products: 0
Time searching name: 0
Time searching quantity: 0
Time searching date: 0
Time searching all: 0
Duration: 0

Total time: 1%
dunnaya@MacBook-Air-Dana helloworld %
```

N = 100:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 100

Time using BIN
Writing time: 0
Reading time: 0
Time adding products: 0
Time searching name: 0
Time searching quantity: 0
Time searching date: 0
Time searching all: 0
Duration: 1

Time using TXT
Writing time: 0
Reading time: 0
Time adding products: 0
Time searching name: 0
Time searching quantity: 0
Time searching date: 0
Time searching all: 0
Duration: 1

Time using VECTOR
Time adding products: 0
Time searching name: 0
Time searching quantity: 0
Time searching date: 0
Time searching all: 0
Duration: 0

Total time: 2%
dunnaya@MacBook-Air-Dana helloworld %
```

N = 1000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 1000

Time using BIN
Writing time: 4
Reading time: 3
Time adding products: 0
Time searching name: 0
Time searching quantity: 0
Time searching date: 0
Time searching all: 0
Duration: 10

Time using TXT
Writing time: 4
Reading time: 3
Time adding products: 0
Time searching name: 0
Time searching quantity: 0
Time searching date: 0
Time searching all: 0
Duration: 8

Time using VECTOR
Time adding products: 0
Time searching name: 0
Time searching quantity: 0
Time searching date: 0
Time searching all: 0
Duration: 0

Total time: 18%
dunnaya@MacBook-Air-Dana helloworld %
```

N = 10 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 10000

Time using BIN
Writing time: 30
Reading time: 20
Time adding products: 7
Time searching name: 0
Time searching quantity: 0
Time searching date: 1
Time searching all: 2
Duration: 61

Time using TXT
Writing time: 15
Reading time: 13
Time adding products: 1
Time searching name: 0
Time searching quantity: 0
Time searching date: 1
Time searching all: 1
Duration: 33

Time using VECTOR
Time adding products: 1
Time searching name: 0
Time searching quantity: 0
Time searching date: 1
Time searching all: 1
Duration: 3

Total time: 97%
dunnaya@MacBook-Air-Dana helloworld %
```

N = 100 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 100000

Time using BIN
Writing time: 131
Reading time: 116
Time adding products: 44
Time searching name: 4
Time searching quantity: 0
Time searching date: 12
Time searching all: 17
Duration: 310

Time using TXT
Writing time: 119
Reading time: 116
Time adding products: 12
Time searching name: 4
Time searching quantity: 0
Time searching date: 12
Time searching all: 17
Duration: 266

Time using VECTOR
Time adding products: 13
Time searching name: 5
Time searching quantity: 0
Time searching date: 12
Time searching all: 18
Duration: 31

Total time: 607%
dunnaya@MacBook-Air-Dana helloworld %
```

N = 180 000: (підставляємо значення, щоб отримати 1 секунду)

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 180000

Time using BIN
Writing time: 217
Reading time: 208
Time adding products: 67
Time searching name: 7
Time searching quantity: 0
Time searching date: 22
Time searching all: 30
Duration: 525

Time using TXT
Writing time: 212
Reading time: 209
Time adding products: 22
Time searching name: 7
Time searching quantity: 0
Time searching date: 22
Time searching all: 31
Duration: 477

Time using VECTOR
Time adding products: 23
Time searching name: 9
Time searching quantity: 0
Time searching date: 22
Time searching all: 32
Duration: 55

Total time: 1057%
dunnaya@MacBook-Air-Dana helloworld %
```

Надалі збільшуємо N в арифметичній прогресії.

N = 360 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 360000

Time using BIN
Writing time: 434
Reading time: 421
Time adding products: 114
Time searching name: 16
Time searching quantity: 0
Time searching date: 45
Time searching all: 62
Duration: 1035

Time using TXT
Writing time: 430
Reading time: 420
Time adding products: 45
Time searching name: 15
Time searching quantity: 0
Time searching date: 44
Time searching all: 61
Duration: 960

Time using VECTOR
Time adding products: 45
Time searching name: 18
Time searching quantity: 0
Time searching date: 44
Time searching all: 63
Duration: 109

Total time: 2104%
dunnaya@MacBook-Air-Dana helloworld %
```

N = 540 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 540000

Time using BIN
Writing time: 632
Reading time: 627
Time adding products: 151
Time searching name: 23
Time searching quantity: 1
Time searching date: 66
Time searching all: 92
Duration: 1508

Time using TXT
Writing time: 626
Reading time: 637
Time adding products: 67
Time searching name: 23
Time searching quantity: 1
Time searching date: 67
Time searching all: 92
Duration: 1428

Time using VECTOR
Time adding products: 67
Time searching name: 23
Time searching quantity: 1
Time searching date: 66
Time searching all: 91
Duration: 159

Total time: 3095%
dunnaya@MacBook-Air-Dana helloworld %
```

N = 720 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 720000

Time using BIN
Writing time: 847
Reading time: 843
Time adding products: 178
Time searching name: 31
Time searching quantity: 2
Time searching date: 88
Time searching all: 122
Duration: 1997

Time using TXT
Writing time: 838
Reading time: 840
Time adding products: 90
Time searching name: 31
Time searching quantity: 1
Time searching date: 88
Time searching all: 122
Duration: 1897

Time using VECTOR
Time adding products: 90
Time searching name: 31
Time searching quantity: 1
Time searching date: 88
Time searching all: 121
Duration: 211

Total time: 4105
dunnaya@MacBook-Air-Dana helloworld %
```

N = 900 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 900000

Time using BIN
Writing time: 1060
Reading time: 1056
Time adding products: 210
Time searching name: 39
Time searching quantity: 2
Time searching date: 111
Time searching all: 153
Duration: 2487

Time using TXT
Writing time: 1047
Reading time: 1045
Time adding products: 113
Time searching name: 39
Time searching quantity: 2
Time searching date: 111
Time searching all: 153
Duration: 2367

Time using VECTOR
Time adding products: 113
Time searching name: 39
Time searching quantity: 2
Time searching date: 110
Time searching all: 152
Duration: 265

Total time: 5119
dunnaya@MacBook-Air-Dana helloworld %
```

N = 1 080 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 1080000

Time using BIN
Writing time: 1268
Reading time: 1254
Time adding products: 271
Time searching name: 47
Time searching quantity: 3
Time searching date: 133
Time searching all: 183
Duration: 2988

Time using TXT
Writing time: 1257
Reading time: 1257
Time adding products: 134
Time searching name: 47
Time searching quantity: 2
Time searching date: 133
Time searching all: 183
Duration: 2842

Time using VECTOR
Time adding products: 135
Time searching name: 46
Time searching quantity: 2
Time searching date: 132
Time searching all: 182
Duration: 317

Total time: 6147
dunnaya@MacBook-Air-Dana helloworld %
```

N = 1 260 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 1260000

Time using BIN
Writing time: 1483
Reading time: 1469
Time adding products: 296
Time searching name: 55
Time searching quantity: 3
Time searching date: 155
Time searching all: 213
Duration: 3474

Time using TXT
Writing time: 1469
Reading time: 1464
Time adding products: 157
Time searching name: 55
Time searching quantity: 3
Time searching date: 155
Time searching all: 213
Duration: 3316

Time using VECTOR
Time adding products: 157
Time searching name: 54
Time searching quantity: 3
Time searching date: 155
Time searching all: 213
Duration: 370

Total time: 7160
dunnaya@MacBook-Air-Dana helloworld %
```

N = 1 440 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 1440000

Time using BIN
Writing time: 1689
Reading time: 1669
Time adding products: 319
Time searching name: 62
Time searching quantity: 3
Time searching date: 177
Time searching all: 244
Duration: 3934

Time using TXT
Writing time: 1661
Reading time: 1676
Time adding products: 180
Time searching name: 62
Time searching quantity: 4
Time searching date: 177
Time searching all: 244
Duration: 3775

Time using VECTOR
Time adding products: 179
Time searching name: 62
Time searching quantity: 3
Time searching date: 177
Time searching all: 243
Duration: 423

Total time: 8132
dunnaya@MacBook-Air-Dana helloworld %
```

N = 1 620 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 1620000

Time using BIN
Writing time: 1905
Reading time: 1886
Time adding products: 344
Time searching name: 70
Time searching quantity: 4
Time searching date: 199
Time searching all: 275
Duration: 4425

Time using TXT
Writing time: 1883
Reading time: 1883
Time adding products: 203
Time searching name: 70
Time searching quantity: 4
Time searching date: 199
Time searching all: 274
Duration: 4259

Time using VECTOR
Time adding products: 203
Time searching name: 70
Time searching quantity: 4
Time searching date: 199
Time searching all: 273
Duration: 477

Total time: 9161
dunnaya@MacBook-Air-Dana helloworld %
```

N = 1 800 000:

```
Modes:
1. Interactive
2. Demo
3. Benchmark
Select mode: 3

Enter N: 1800000

Time using BIN
Writing time: 2118
Reading time: 2094
Time adding products: 363
Time searching name: 78
Time searching quantity: 5
Time searching date: 221
Time searching all: 305
Duration: 4897

Time using TXT
Writing time: 2096
Reading time: 2099
Time adding products: 224
Time searching name: 78
Time searching quantity: 4
Time searching date: 221
Time searching all: 304
Duration: 4742

Time using VECTOR
Time adding products: 224
Time searching name: 92
Time searching quantity: 4
Time searching date: 221
Time searching all: 318
Duration: 543

Total time: 10182
dunnaya@MacBook-Air-Dana helloworld %
```

Розмір файлів:

	BIN	TXT
N = 10	337 Б	337 Б
N = 100	3337 Б	3356 Б
N = 1000	33 186 Б	33 200 Б
N = 10 000	331 897 Б	331 923 Б
N = 100 000	3 318 359 Б	3 318 445 Б
N = 180 000	5 973 125 Б	5 974 431 Б
N = 360 000	11 947 556 Б	11 948 323 Б
N = 540 000	17 921 244 Б	17 923 615 Б
N = 720 000	23 895 879 Б	23 898 345 Б
N = 900 000	29 870 237 Б	29 870 627 Б
N = 1 080 000	35 844 860 Б	35 845 562 Б
N = 1 260 000	41 820 334 Б	41 817 111 Б
N = 1 440 000	47 794 225 Б	47 793 171 Б
N = 1 620 000	53 768 143 Б	53 769 136 Б
N = 1 800 000	59 740 865 Б	59 742 763 Б