## BRANCH AND BOUND BFS

| | | Time | | nb item | | memory usage | |
| min | max | average | capacity | | min | max | average |
|---|---|---|---|---|---|---|---|
| 0.044883728 | 0.059837818 | 0.050863886 | 10 | **1000** | 0.005072 | 0.012335 | 0.0067311 |
| 0.043397427 | 0.058836937 | 0.048945999 | 100 | | 0.005072 | 0.009642 | 0.0059751 |
| 0.060836077 | 0.096767664 | 0.067781401 | 1000 | | 0.005072 | 0.008634 | 0.0058711 |
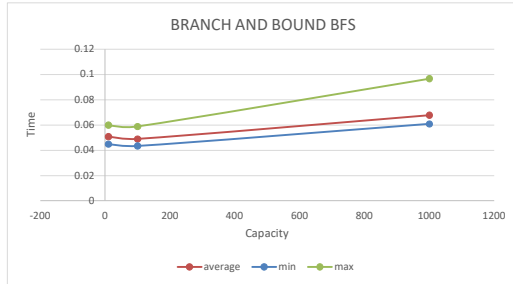


## BRANCH AND BOUND DFS

| | | Time | | nb item | | memory usage | |
| min | max | average | capacity | | min | max | average |
|---|---|---|---|---|---|---|---|
| 0.000996351 | 0.003991127 | 0.001994443 | 10 | **1000** | 0.002424 | 0.002424 | 0.002424 |
| 0.00099659 | 0.002994776 | 0.001895046 | 100 | | 0.002424 | 0.002424 | 0.002424 |
| 0.001953125 | 0.002991915 | 0.002094507 | 1000 | | 0.002424 | 0.002424 | 0.002424 |
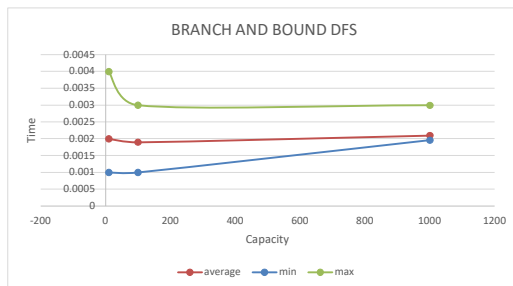


## Dynamic Programming

| | | Time | | nb item | | memory usage | |
| min | max | average | capacity | | min | max | average |
|---|---|---|---|---|---|---|---|
| 0.040890694 | 0.112704515 | 0.060090613 | 10 | **1000** | 0.004424 | 0.005319 | 0.004745 |
| 0.301818371 | 0.556623459 | 0.39198277 | 100 | | 0.004995 | 0.007294 | 0.0056738 |
| 4.517282963 | 6.205485821 | 4.947121572 | 1000 | | 0.005198 | 0.005618 | 0.0054536 |
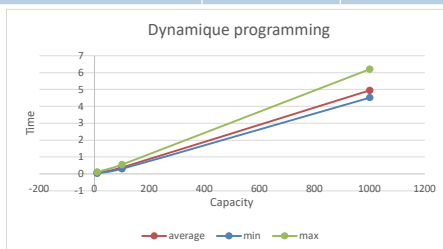


## Dynamic Programming TOP DOWN

| | | Time | | nb item | | memory usage | |
| min | max | average | capacity | | min | max | average |
|---|---|---|---|---|---|---|---|
| 0.509230375 | 1.144943953 | 0.786012554 | 10 | **1000** | 1.08116 | 1.19092 | 1.1799206 |
| 0.537594795 | 0.646872997 | 0.575750303 | 100 | | 1.78894 | 1.814362 | 1.8117458 |
| 0.686478853 | 1.427852392 | 0.900892687 | 1000 | | 1.909614 | 1.934931 | 1.9322691 |
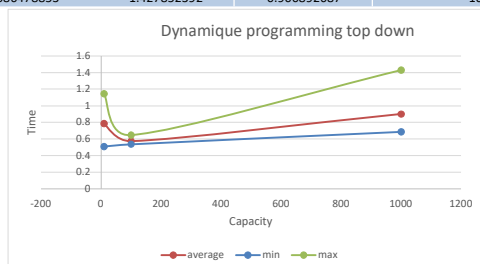
## Dynamic Programming FPTAS

| Time | | | | | memory usage | | |
|------|------|---------|----------|---|------|------|---------|
| min | max | average | capacity | nb item | min | max | average |
| 0.153968096 | 0.249375343 | 0.200872135 | 10 | 1000 | 0.007228 | 0.013564 | 0.0084658 |
| 0.363996506 | 0.664945602 | 0.447573948 | 100 | | 0.007822 | 0.011638 | 0.0082607 |
| 4.547572374 | 5.443911552 | 4.817906713 | 1000 | | 0.007879 | 0.011757 | 0.0084209 |
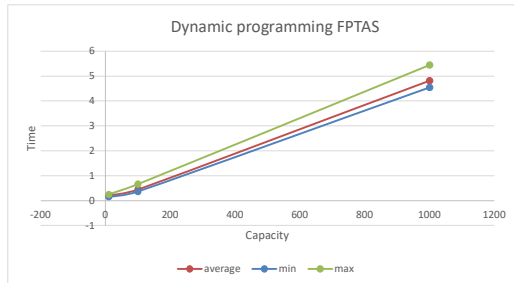


## Genetic No optima

| Time | | | | | memory usage | | |
|------|------|---------|----------|---|------|------|---------|
| min | max | average | capacity | nb item | min | max | average |
| 0.008974314 | 0.081758499 | 0.026781416 | 10 | 1000 | 4.58E-03 | 0.010295 | 5.06E-03 |
| 0.01 | 0.187499046 | 0.068376169 | 100 | | 0.004576 | 0.007985 | 0.00540888 |
| 7.352202892 | 8.962793589 | 8.18460834 | 1000 | | 5.40E-03 | 0.005766 | 5.59E-03 |



## Greedy value
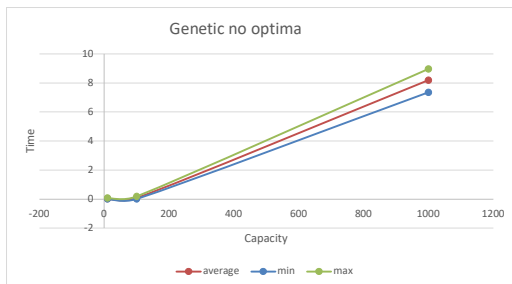
| Time | | | | | memory usage | | |
|------|------|---------|----------|---|------|------|---------|
| min | max | average | capacity | nb item | min | max | average |
| 0.03789854 | 0.218886614 | 0.1160079 | 10 | 1000 | 0.002608 | 0.006385 | 0.0035554 |
| 0.040887833 | 0.048872709 | 0.043483734 | 100 | | 0.002672 | 0.00729 | 0.0035727 |
| 0.03789711 | 1.964513779 | 0.238193846 | 1000 | | 0.002672 | 0.051813 | 0.0132817 |
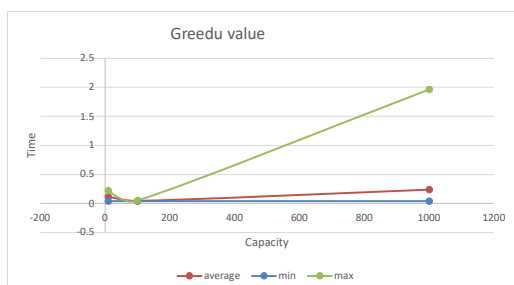


## Greedy weight

Time                                                                 memory usage

| min | max | average | capacity | | nb item | | min | max | average |
|---|---|---|---|---|---|---|---|---|---|
| 0.067992449 | 0.194053173 | 0.128005767 | 10 | | 1000 | | 0.002672 | 0.006747 | 0.003757 |
| 0.037897587 | 0.048873663 | 0.041206026 | 100 | | | | 0.002672 | 0.005102 | 0.0032612 |
| 0.037906647 | 0.042892218 | 0.040753055 | 1000 | | | | 0.002672 | 0.007749 | 0.0037242 |



**RANDOM CMCM**

| | Time | | | | nb item | | | memory usage | |
|---|---|---|---|---|---|---|---|---|---|
| min | max | average | capacity | | 1000 | | min | max | average |
| 0.874679327 | 1.919965982 | 1.217525029 | 10 | | | | 0.000594 | 0.000712 | 0.0006203 |
| 0.865711451 | 0.952108622 | 0.900152302 | 100 | | | | 0.000591 | 0.000712 | 0.0006555 |
| 0.959111452 | 1.580878973 | 1.105352926 | 1000 | | | | 0.000567 | 0.00074 | 0.0006682 |
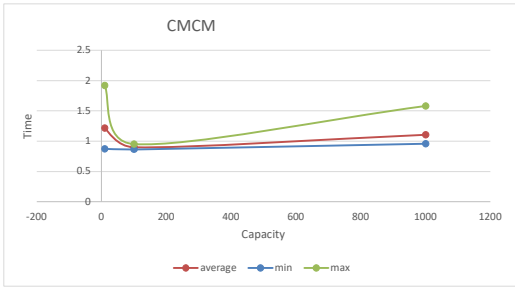


**COMPARISON ALGORITHM / TIME**

| algo | average |
|---|---|
| Branch & bound bfs | 0.067781401 |
| Branch & bound dfs | 0.002094507 |
| dynamic programming | 4.947121572 |
| dynamic top down | 0.900892687 |
| dynamic FPTAS | 4.817906713 |
| Greedy value | 0.238193846 |
| Greedy weight | 0.040753055 |
| CMCM | 1.105352926 |