(1) Simulated Annealing:

A. OneMax Problem

參數 ./main 100 30 1000 0.5

100 bits

30 run

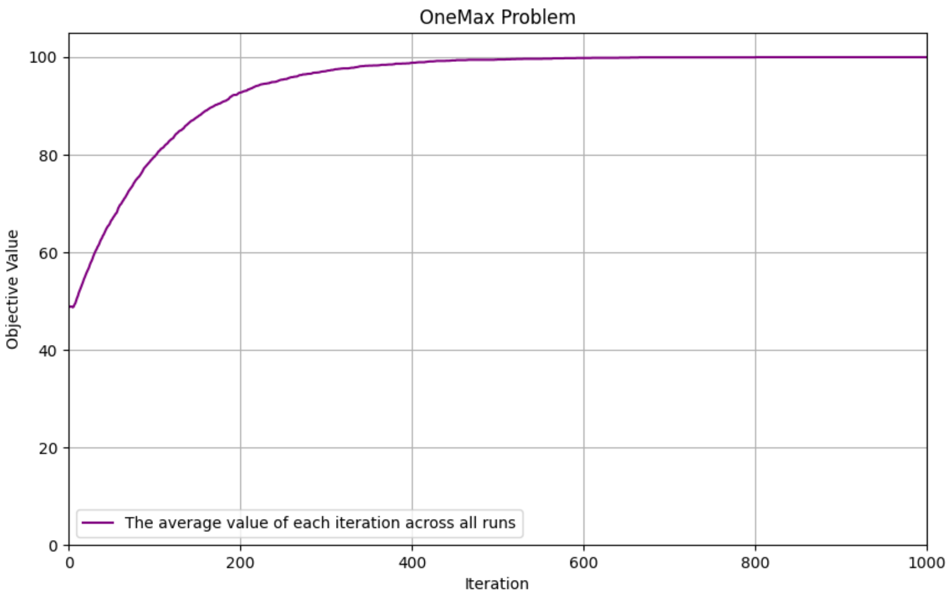
1000 iterations

α = 0.5

T = 100 (initial)

```
allen@DESKTOP-TKIN1M5:/mnt/c/Users/User/Desktop/Lab/Week2/Simulated Annealing$ ./main 100 30 1000 0.5 OneMax
```

```
Iteration: 998, Best Value: 100, Answer: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Iteration: 999, Best Value: 100, Answer: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Iteration: 1000, Best Value: 100, Answer: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
```



B. Deception Problem

參數 ./main 100 30 1000 0.5

16 bits，最大值經手算為 49151 沒錯

30 run

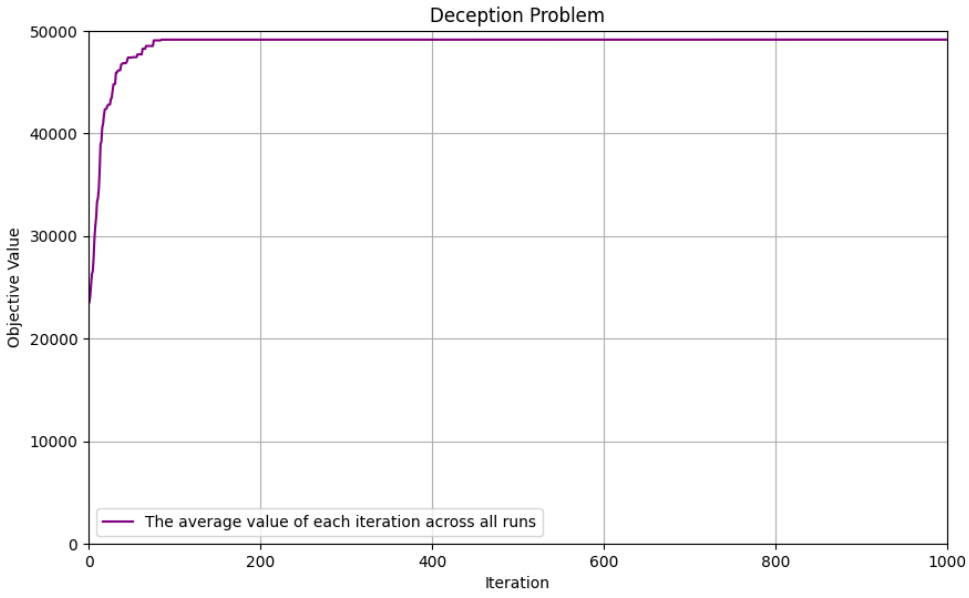
1000 iterations

α = 0.5

T = 100 (initial)

```
allen@DESKTOP-TKIN1M5:/mnt/c/Users/User/Desktop/Lab/Week2/Simulated Annealing$ ./main 16 30 1000 0.5 Deception
```

```
Iteration: 998, Best Value: 49151, Answer: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Iteration: 999, Best Value: 49151, Answer: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Iteration: 1000, Best Value: 49151, Answer: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
```



(2) Genetic Algorithm:

參數 ./main 100 30 1000 0.5

30 bits

30 run

20000 evaluation

3 population

0.6 crossover rate

0.1 mutation rate

```
allen@DESKTOP-TKIN1M5:/mnt/c/Users/User/Desktop/Lab/Week2/Genetic Algorithm$ ./main 30 30 20000 3
```

```
Evaluation: 19993, Best Value: 30, Answer: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Evaluation: 19998, Best Value: 30, Answer: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Evaluation: 20003, Best Value: 30, Answer: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
```