

General parameter Settings for algorithms: The number of iterations T=500, the upper limit of population N=50, the dimension dim=10, and the upper and lower limits of test cases ub=100, lb=-100, respectively.

Test cases:

Name	Function
Sphere	$F_1(x) = \sum_{i=1}^D x_i^2$
Schwefel's 2.22	$F_2(x) = \sum_{i=1}^D x_i + \prod_{i=1}^D x_i $
Powell Sum	$F_3(x) = \sum_{i=1}^D x_i ^{i+1}$
Schwefel's 1.2	$F_4(x) = \sum_{i=1}^D \left(\sum_{j=1}^D x_j \right)^2$
Schwefel's 2.21	$F_5(x) = \max_i \{ x_i , 1 \leq i \leq D\}$
Rosenbrock	$F_6(x) = \sum_{i=1}^{D-1} \left[100 (x_{i+1} - x_i^2)^2 + (x_i - 1)^2 \right]$
Step	$F_7(x) = \sum_{i=1}^D (x_i + 0.5)^2$
Quartic	$F_8(x) = \sum_{i=1}^D ix_i^4 + \text{random}[0, 1]$
Zakharov	$F_9(x) = \sum_{i=1}^D x_i^2 + \left(\sum_{i=1}^D 0.5ix_i \right)^2 + \left(\sum_{i=1}^D 0.5ix_i \right)^4$

The minimum value of the above test cases is 0. You need to write the code of the corresponding evolutionary computation algorithm, and obtain the minimum value of the test cases based on the provided parameters.