In [1]:
```
#!pip install pygad
```

```
Requirement already satisfied: pygad in c:\users\user 18\anaconda3\lib\site-p
ackages (2.19.2)
Requirement already satisfied: cloudpickle in c:\users\user 18\anaconda3\lib
\site-packages (from pygad) (2.0.0)
Requirement already satisfied: matplotlib in c:\users\user 18\anaconda3\lib\s
ite-packages (from pygad) (3.5.2)
Requirement already satisfied: numpy in c:\users\user 18\anaconda3\lib\site-p
ackages (from pygad) (1.21.5)
Requirement already satisfied: kiwisolver>=1.0.1 in c:\users\user 18\anaconda
3\lib\site-packages (from matplotlib->pygad) (1.4.2)
Requirement already satisfied: packaging>=20.0 in c:\users\user 18\anaconda3
\lib\site-packages (from matplotlib->pygad) (21.3)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\user 18\anaconda
3\lib\site-packages (from matplotlib->pygad) (4.25.0)
Requirement already satisfied: pyparsing>=2.2.1 in c:\users\user 18\anaconda3
\lib\site-packages (from matplotlib->pygad) (3.0.9)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\user 18\anaco
nda3\lib\site-packages (from matplotlib->pygad) (2.8.2)
Requirement already satisfied: pillow>=6.2.0 in c:\users\user 18\anaconda3\li
b\site-packages (from matplotlib->pygad) (9.2.0)
Requirement already satisfied: cycler>=0.10 in c:\users\user 18\anaconda3\lib
\site-packages (from matplotlib->pygad) (0.11.0)
Requirement already satisfied: six>=1.5 in c:\users\user 18\anaconda3\lib\sit
e-packages (from python-dateutil>=2.7->matplotlib->pygad) (1.16.0)
```

In [2]:
```
import numpy as np
import pygad
import warnings
warnings.filterwarnings('ignore')
```

In [3]:
```
X=[4,-2,3.5,-11,-4.7]
desired_output = 44
```

In [4]:
```
def fitness_func(solution,solution_idx):
    output=np.sum(solution*X)
    fitness = 1.0/np.abs(output-desired_output)
    return fitness
```

In [5]:
```
fitness_function=fitness_func
num_generations=50
num_parents_mating=4
sol_per_pop=8
num_genes=len(X)
init_range_low=-2
init_range_high=5
parent_selection_type='sss'
keep_parents=1
crossover_type="single_point"
mutation_type="random"
```

In [6]:
```
ga_instance=pygad.GA(fitness_func=fitness_function,num_generations=num_generat
                     sol_per_pop=sol_per_pop,
                    num_genes=num_genes,init_range_low=init_range_low,init_ran
                    parent_selection_type=parent_selection_type,
                    keep_parents=keep_parents,crossover_type=crossover_type,mu
                     mutation_percent_genes=10)
```

In [7]:
```
ga_instance.run()
```

In [8]:
```
solution,solution_fitness,solution_idx=ga_instance.best_solution()
print('Solution is:',solution)
```

```
Solution is: [ 3.51392072  0.52512115  2.33623501 -1.82800744 -0.5746283 ]
```

In [9]:
```
print('Solution Fitness:',solution_fitness)
```

```
Solution Fitness: 112.33382755913453
```

In [ ]: