OUTPUT:

1.Cultural algorithm:

```
Generation 1: Best accuracy = 0.9375
Generation 2: Best accuracy = 0.9375
Generation 3: Best accuracy = 0.9375
Generation 4: Best accuracy = 0.9475
Generation 5: Best accuracy = 0.9475
Generation 6: Best accuracy = 0.9475
Generation 7: Best accuracy = 0.9475
Generation 8: Best accuracy = 0.9475
Generation 9: Best accuracy = 0.9475
Generation 10: Best accuracy = 0.9475
Generation 11: Best accuracy = 0.9475
Generation 12: Best accuracy = 0.9475
Generation 13: Best accuracy = 0.9475
Generation 14: Best accuracy = 0.9475
Generation 15: Best accuracy = 0.9475
Generation 16: Best accuracy = 0.9475
Generation 17: Best accuracy = 0.9475
Generation 18: Best accuracy = 0.9475
Generation 19: Best accuracy = 0.9475
Generation 20: Best accuracy = 0.9475
```

```
Best individual: [1, 0, 1, 0, 1, 0, 1, 1]
Best fitness: 0.95
```

2.Genetic algorithm:

```
Fittest individual: [0, 1, 0, 1, 1, 0, 0, 1, 1, 1]
Accuracy: 94.72%
```

3.Particle swarm optimization:

```
Accuracy: 98.50%
```

4.Ant colony optimization:

```
Accuracy: 94.75%
```

Results:The particle swarm optimization yields better accuracy.