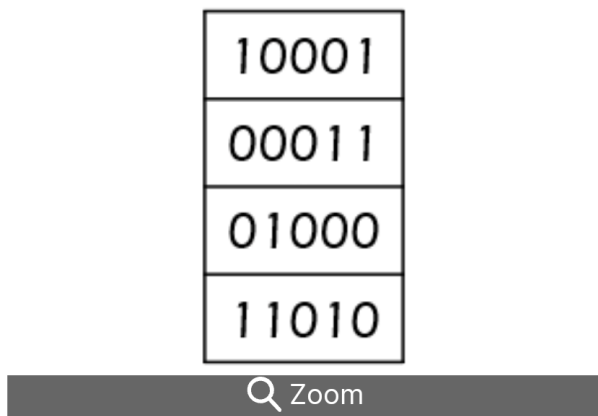


## 1 of 10

What are some disadvantages of the Proportional Selection operator?

- ☐ A The best individuals might not be selected.
- ☐ B Fitness values can't take negative values.
- ☐ C Both A and B are correct.
- ☐ D None is correct.

## 4 of 10



We are optimizing OneMax function. Using tournament selection with tournament size 2, which individual in the current population will surely be selected?

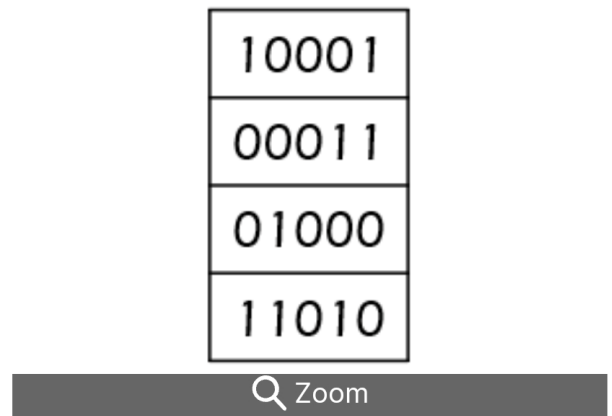
- ☐ A 10001
- ☐ B 00011
- ☐ C 01000
- ☐ D 11010

## 3 of 10

In the POPOP implementation for Genetic Algorithm, which selection operator is used?

- ☐ A Tournament selection
- ☐ B Proportional Selection
- ☐ C Roulette Wheel Selection
- ☐ D Truncation Selection

## 5 of 10



We are optimizing OneMax function. We use tournament selection with tournament size 2 to form a selection set of 4 individuals from the current population. How many copies of 11010 are there in the selection set?

- ☐ A 1
- ☐ B 2
- ☐ C 3
- ☐ D 4

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10101
00011
00000
11010
11101
10100
01001
10001

We are optimizing OneMax function. Using tournament selection with tournament size 4 on the current population, which individual will surely be selected?

- ☐ A 11101
- ☐ B 11111
- ☐ C 00000
- ☐ D 10101

7 of 10

10101
00011
00000
11010
11101
10100
01001
10001

We are optimizing OneMax function. We use tournament selection (without replacement) with tournament size 2 to form a selection set of 4 individuals from the current population. How many copies will the individual 11101 have in the selection set?

- ☐ A 1
- ☐ B 2
- ☐ C 3
- ☐ D 4

## 8 of 10

The traditional mechanism for Genetic Algorithm is Population → Selection → Variation → Replacement (offspring population replaces the whole parent population). What are the drawbacks of this mechanism?

- ☐ A If there are no offspring solution that is better than parents, the best solution in the parent population is discarded.
- ☐ B The population might take a very long time to converge.
- ☐ C Both A and B are correct.
- ☐ D None is correct.

## 9 of 10

In the POPOP implementation of Genetic Algorithm, the selection operation is performed on which population?

- ☐ A The parent population
- ☐ B The offspring population
- ☐ C The pool of both parent and offspring individuals
- ☐ D There is no selection in POPOP

## 10 of 10

We implement the simple Genetic Algorithm with POPOP mechanism. Tournament selection with tournament size 4 is used. If the best individual in the population (of size  $N$ ) can't be further improved, after how many generation will the population converge?

- ☐ A  $O(N)$
- ☐ B  $O(\log_2 N)$
- ☐ C  $O(N^2)$
- ☐ D  $O(\sqrt{N})$