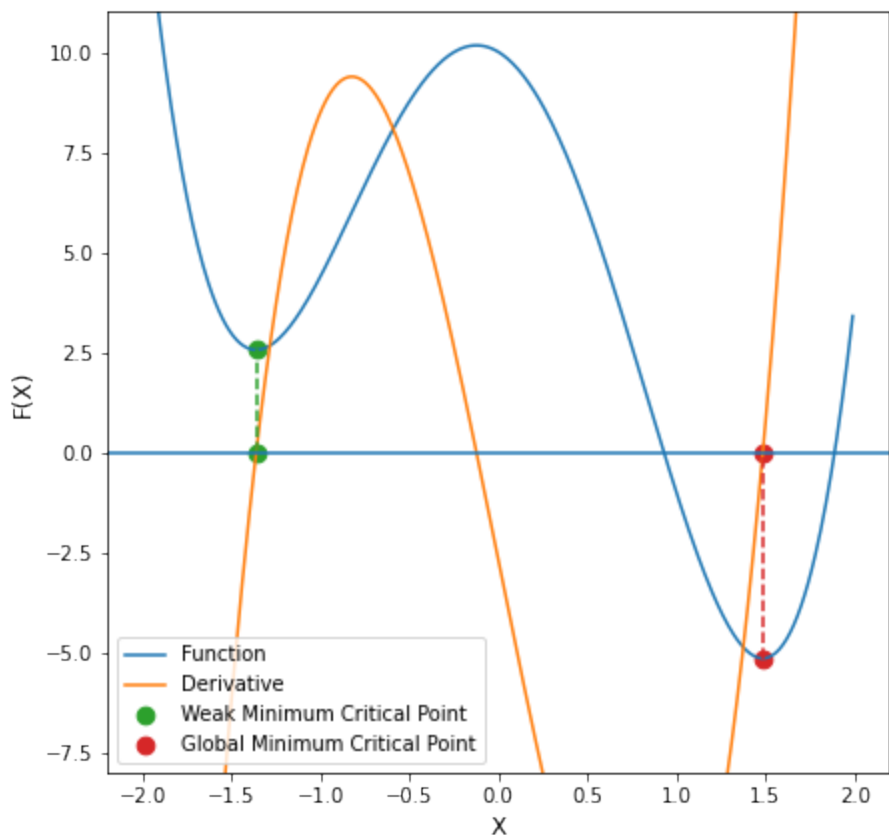
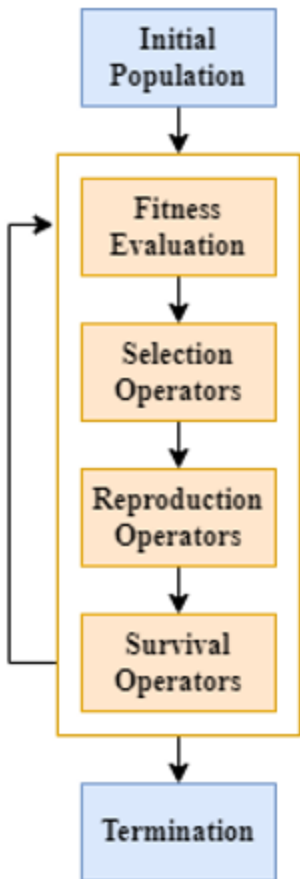


Example of a Weak and Global Minimum Critical Point

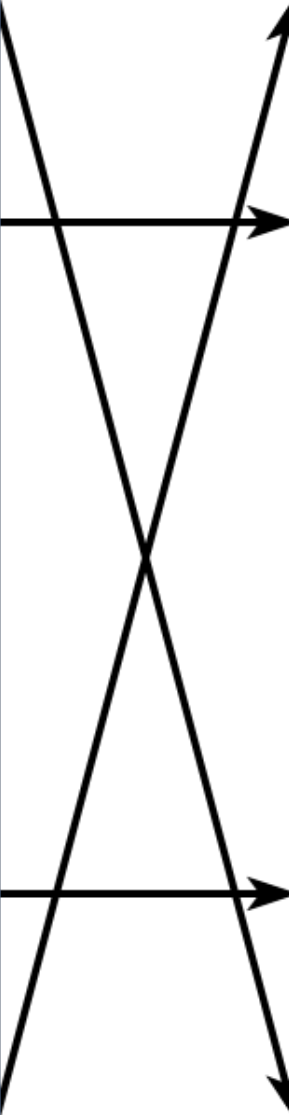


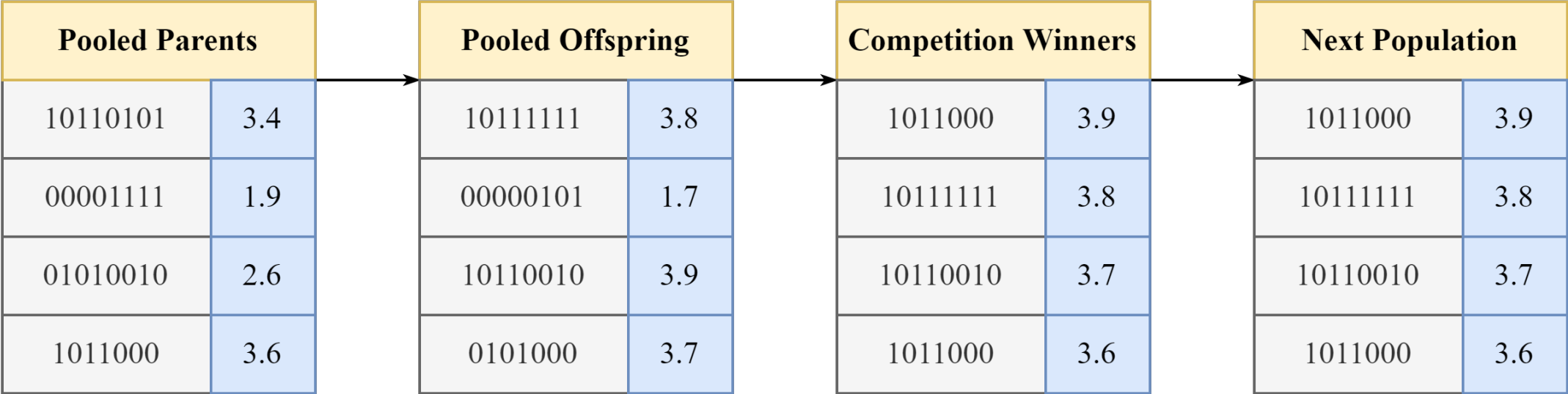


Chromosome	Fitness
10110101	2.3
01001011	3.4
11010101	1.3
01010111	1.9
10100110	2.5
00001111	5

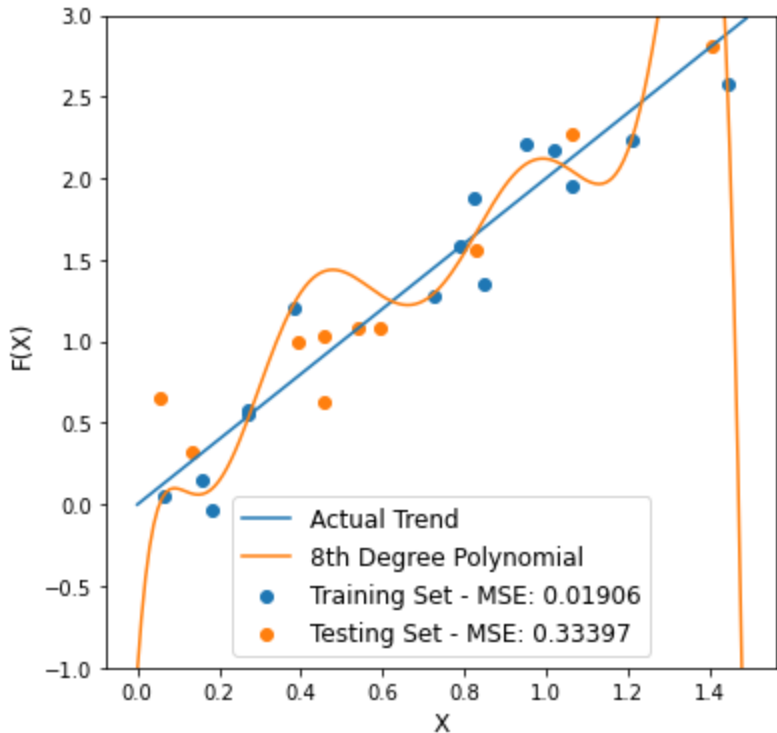
Parent Pair 1	
00001111	5
01001011	3.4

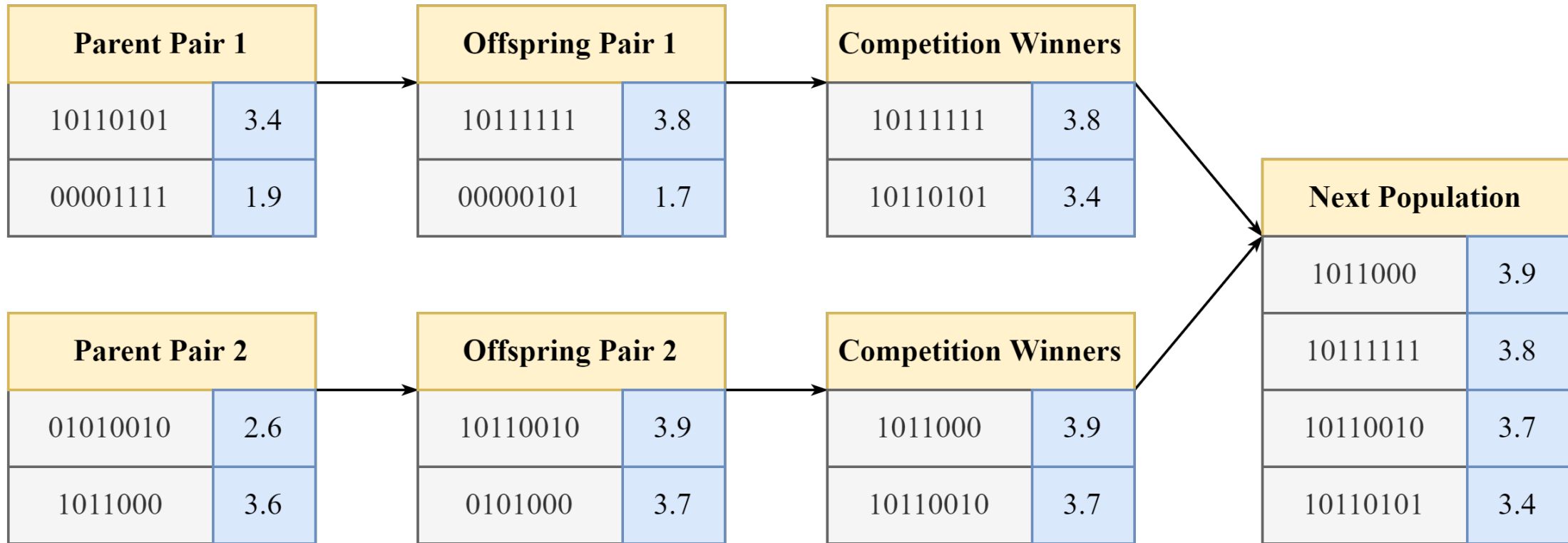
Parent Pair 2	
10100110	2.5
10110101	2.3





Example of Overfitting





A)

Parent 1

4	-3	1	5	1	3	9	12	-4
---	----	---	---	---	---	---	----	----

Parent 2

5	-2	-1	0	-2	-5	-5	8	3
---	----	----	---	----	----	----	---	---

B)

Offspring

4.5	-2.5	0	2.5	-0.5	-1	2	10	-0.5
-----	------	---	-----	------	----	---	----	------

Mean Crossover

C)

Offspring 1

4	-3	1	5	1	3	-5	8	3
---	----	---	---	---	---	----	---	---

Offspring 2

5	-2	-1	0	-2	-5	9	12	-4
---	----	----	---	----	----	---	----	----

One Point
Crossover

E)

Offspring 1

5	-3	-1	5	1	3	-5	8	-4
---	----	----	---	---	---	----	---	----

Offspring 2

4	-2	1	0	-2	-5	9	12	3
---	----	---	---	----	----	---	----	---

Uniform Point
Crossover

D)

Offspring 1

4	-3	1	0	-2	-5	9	12	-4
---	----	---	---	----	----	---	----	----

Offspring 2

5	-2	-1	5	1	3	-5	8	3
---	----	----	---	---	---	----	---	---

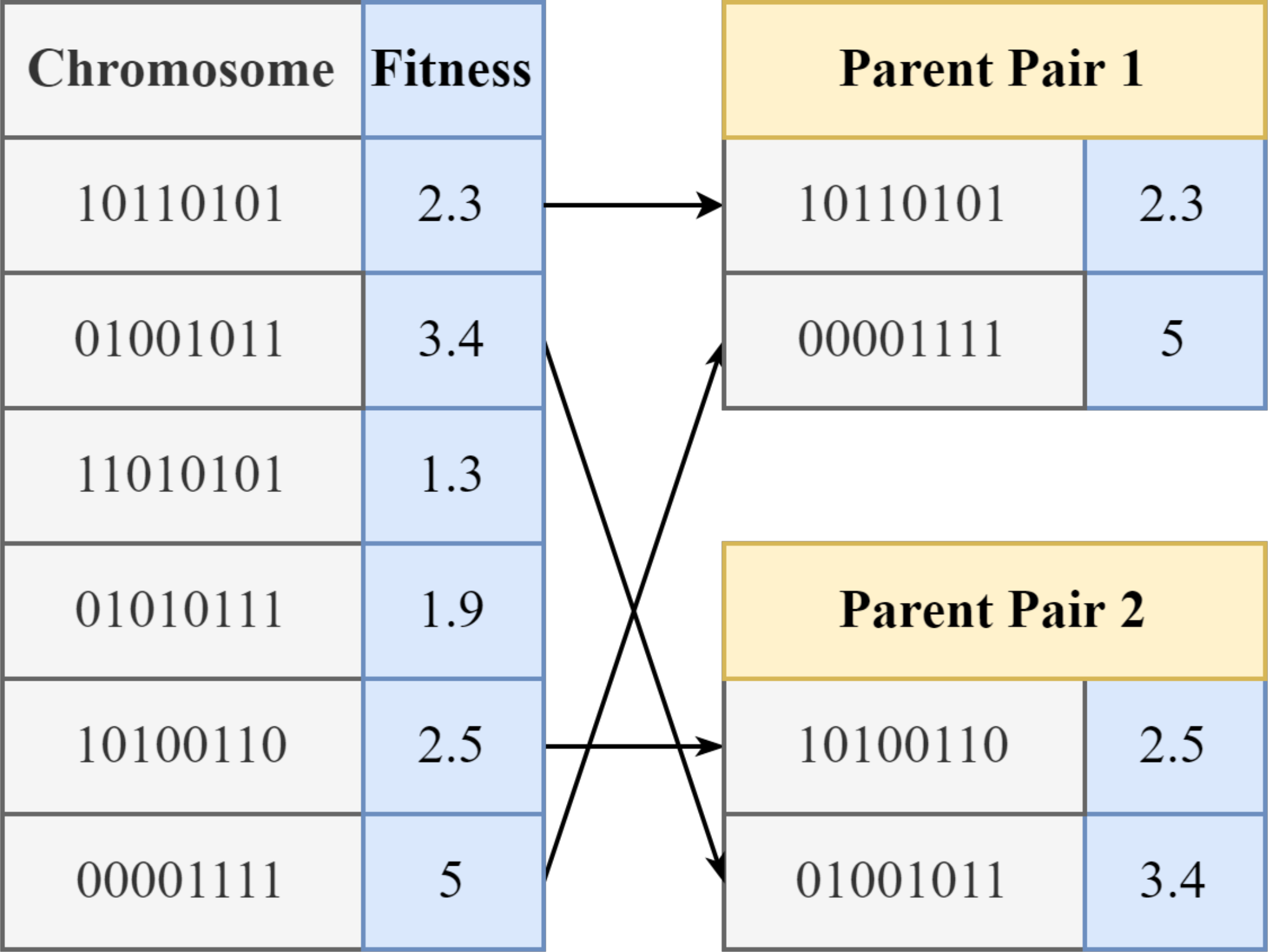
Multi-Point
Crossover

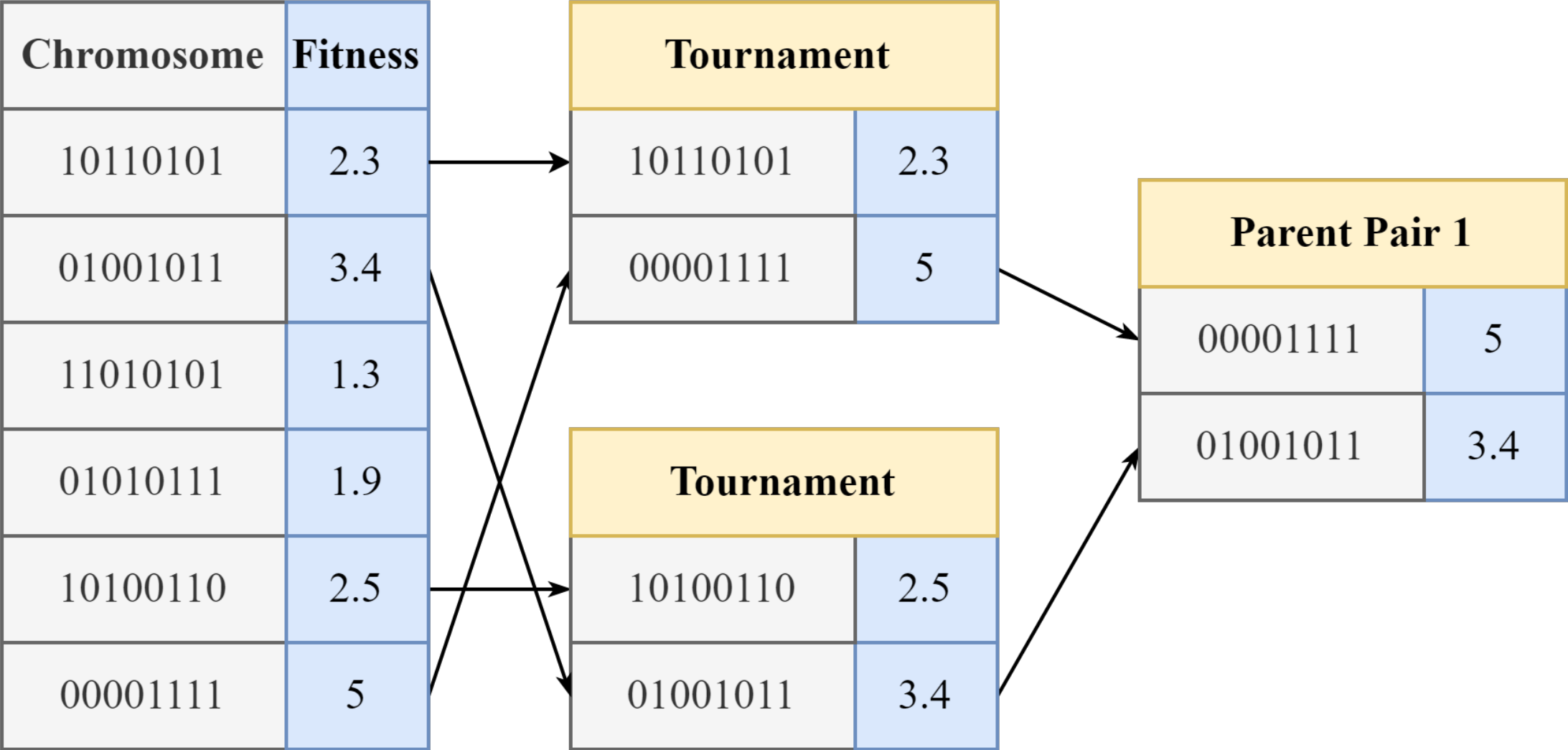
Chromosome	Fitness	Prob
10110101	2.3	14%
01001011	3.4	21%
11010101	1.3	8%
01010111	1.9	12%
10100110	2.5	15%
00001111	5	30%

Parent Pair 1	
00001111	5
01001011	3.4

Parent Pair 2	
01001011	3.4
01010111	1.9







```
graph TD; A[All Data] --> B[Training Data]; A --> C[Val. Data]; A --> D[Test Data];
```

All Data

Training Data

Val.
Data

Test
Data

All Data

Training Data

Test Data

Fold 1 Fold 2 Fold 3

Split 1

Val.

Train

Split 2

Train

Val.

Train

Split 3

Train

Val.

Compare
Hyperparameters/Models

Test Data

Evaluate Best