Lab : **Genetic Algorithms**

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| **TSP** | **Chromosome** | **F(x)** | |
| X1 | A-C-I-K-L-J- F-E-B-D-H-G | 24+25+18+18+16+24+18+27+20+20+17 | 227 |
| X2 | L-K-I-C-F-E- B-A-D-H-G-J | 18+18+25+19+18+27+30+(30+20)+20+17+(43+16) | 301 |
| X3 | F-J-L-G-H-E- B-D-A-C-I-K | 24+16+43+17+22+27+20+(20+30)+24+(24+25)+18 | 310 |
| X4 | E-B-D-H-G-L- J-F-C-A-I-K | 27+20+20+17+43+16+24+19+24+25+18 | 253 |
| X5 | B-A-C-I-K-L - J-F-E-H-D-G | 30+24+25+18+18+16+24+18+22+20+(20+17) | 252 |
| X6 | K-I-C-F-J-L- G-H-D-B-E-A | 18+25+19+24+16+43+17+20+20+27+(27+30) | 286 |
|  | | | **1629** |

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| **TSP** | **Chromosome** | **F(x)** | **Fitness Ratio (%)** | |
| X1 | A-C-I-K-L-J- F-E-B-D-H-G | 227 | (227 / 1629) \* 100 | 13.93 |
| X2 | L-K-I-C-F-E- B-A-D-H-G-J | 301 | (301 / 1629) \* 100 | 18.48 |
| X3 | F-J-L-G-H-E- B-D-A-C-I-K | 310 | (310 / 1629) \* 100 | 19.03 |
| X4 | E-B-D-H-G-L- J-F-C-A-I-K | 253 | (253 / 1629) \* 100 | 15.53 |
| X5 | B-A-C-I-K-L- J-F-E-H-D-G | 252 | (252 / 1629) \* 100 | 15.47 |
| X6 | K-I-C-F-J-L- G-H-D-B-E-A | 286 | (286 / 1629) \* 100 | 17.56 |

Parent selected: **X2**and **X3**

2nd generation / Offspring:

|  |  |
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| Parent | 2nd generation |
| **X2**and **X3  :** (One - point Cross Over)  **X2** : L-K-I-C-F-E | B-A-D-H-G-J  **X3 :** F-J-L-G-H-E | B-D-A-C-I-K | **X1**: L-K-I-C-F-E- B-D-A-C-I-K  **X2 :** F-J-L-G-H-E- B-A-D-H-G-J |
| **X2**and **X3  :** (Two - point Cross Over)  **X2** : L-K-I-C | F-E-B-A | D-H-G-J  **X3 :** F-J-L-G | H-E-B-D | A-C-I-K | **X3**: L-K-I-C- H-E-B-D- D-H-G-J  **X4 :** F-J-L-G- F-E-B-A- A-C-I-K |
| **X2**and **X3  :** (Mutation)  **X2** : L-K-I-C-F-E-B-A-D- H-G-J  **X3 :** F-J-L-G-H-E-B-D-A- C-I-K | **X5**: L-K-I-C-F-E-B-A-D- E-G-J  **X6 :** F-J-L-G-H-E-B-D-A- B-I-K |

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| **2nd Gene.** | **Chromosome** | **F(x)** | |
| X1 | L-K-I-C-F-E- B-D-A-C-I-K | 18+18+25+19+18+27+20+(20+30)+24+25+18 | 262 |
| X2 | F-J-L-G-H-E-B-A-D-H-G-J | 24+16+43+17+22+27+30+(30+20)+20+17+(43+16) | 325 |
| X3 | L-K-I-C- H-E-B-D- D-H-G-J | 18+18+25+(19+18+22)+22+27+20+0+20+17+(43+17) | 286 |
| X4 | F-J-L-G- F-E-B-A- A-C-I-K | 24+16+43+(17+22+18)+18+27+30+0+24+25+18 | 282 |
| X5 | L-K-I-C-F-E-B-A-D-E-G-J | 18+18+25+19+18+27+30+(30+27)+(22+17)+(43+16) | 310 |
| X6 | F-J-L-G-H-E-B-D-A-B-I-K | 24+16+43+17+22+27+20+(20+30)+30+(30+24+25)+18 | 356 |
|  | | | **1821** |



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| **Assessment** | Lab Genetic Algorithms |
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| **Matric ID** | CB 14036 |
| **Section** | 1 C |
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