1. Inisialisasi Populasi dan perhitungan Fitness

Menghitung berat dan nilai fitness

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Code | Items | Weight(g) | Priority | K0 | K1 | K2 | K3 |
| B1 | Laptop Charger | 300 | 8 | 0 | 1 | 1 | 0 |
| B2 | Laptop | 1400 | 9 | 0 | 1 | 1 | 0 |
| B3 | Power Bank | 300 | 6 | 0 | 1 | 0 | 1 |
| B4 | Phone Charger Pouch | 100 | 7 | 0 | 0 | 1 | 1 |
| B5 | ANC Headset | 300 | 5 | 0 | 1 | 1 | 1 |
| B6 | Earbuds | 100 | 4 | 1 | 1 | 1 | 0 |
| B7 | Wireless Mouse | 100 | 7 | 1 | 0 | 1 | 0 |
| B8 | Flash Drive | 10 | 6 | 1 | 1 | 0 | 0 |
| B9 | Keyboard | 750 | 4 | 0 | 1 | 0 | 1 |
| B10 | Notebook | 50 | 2 | 0 | 0 | 0 | 1 |
| B11 | Pencil Case | 100 | 2 | 1 | 0 | 1 | 0 |
| B12 | Water Bottle | 1500 | 5 | 1 | 1 | 0 | 0 |
| B13 | Umbrella | 230 | 6 | 0 | 0 | 0 | 1 |
| B14 | USB Hub | 50 | 5 | 1 | 0 | 1 | 0 |
| B15 | Medicinal Pouch | 150 | 6 | 1 | 1 | 0 | 1 |
| B16 | Sunscreen Bottle | 100 | 2 | 1 | 0 | 0 | 1 |
| Total berat (kg) = 12,040 | | | | 2,110 | 4,960 | 2,450 | 1,980 |
| Total fitness = 175 | | | | 37 | 53 | 47 | 38 |

1. Selection

Menentukan nilai fungsi relative serta cumulative dari populasi yang ada untuk melakukan n proses Seleksi Roulette Wheel

|  |  |  |
| --- | --- | --- |
| Kromosom | Fitness Relative (K[i]) | Fitness Cummulative (C[i]) |
| 0 |  | 0 – 0,211 |
| 1 |  | 0,211 – 0,514 |
| 2 |  | 0,514 – 0,783 |
| 3 |  | 0,783 – 1 |

Diketahui jika Nilai Acak Kromosom R[i] adalah sebagai berikut :

|  |  |
| --- | --- |
| * + - R[1] = 0.38     - R[2] = 0.37 | * + - R[3] = 0.03     - R[4] = 0.24 |

Kromosom yang terpilih sebagai *Parent* berdasarkan nilai acak :

K1, K1, K0, K1

Pasangan 1 : K1 – K1

Pasangan 2 : K0 – K1

1. Crossover

Probabilitas Crossover : 0,81

Angka acak : R[1] = 0,71 ; R[2] = 0,17

Titik Rekombinasi = 8

|  |  |  |  |
| --- | --- | --- | --- |
| **Kromosom Orang Tua** | | **Titik Rekombinasi** | **Kromosom Anak Hasil Rekombinasi** |
| K1 | 1110110110010010 | 8 | 1110110110010010 |
| K1 | 1110110110010010 | 8 | 1110110110010010 |
| K0 | 0000011100110111 | 8 | 0000011100110111 |
| K1 | 1110110110010010 | 8 | 1110110100110111 |

1. Mutasi

Probabilitas Mutasi : 0,06

Nilai acak :

R[1] = 0,01

R[2] = 0,15

R[3] = 0,17

R[4] = 0,04

Titik mutasi : 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Kromosom Anak Hasil Rekombinasi** | | **Hasil Mutasi** | **Total nilai prioritas maing-masing kromosom** | **Total berat masing-masing kromosom** |
| K0 | 1110110110010010 | 1100110110010010 | 47 |  |
| K1 | 1110110110010010 | 1110110110010010 | 53 |  |
| K2 | 0000011100110111 | 0000011100110111 | 32 |  |
| K3 | 1110110100110111 | 1100110100110111 | 52 |  |

**Best Individu iterasi pertama adalah K1 dengan nilai fitness 53**