Nama : Ivan Andrianto

NIM : F1D018027

Tugas KNN

Bioinformatika

**SOAL**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Tinggi Badan** | **Berat Badan** | **Lingkar Lengan Bawah** | **Lingkar Perut** | **Status Gizi** |
| 1 | 159 | 58 | 15 | 70 | Normal |
| 2 | 160 | 54 | 15 | 73 | Normal |
| 3 | 162 | 54 | 15 | 71 | Normal |
| 4 | 163 | 59 | 14 | 74 | Normal |
| 5 | 164 | 53 | 15 | 71 | Normal |
| 6 | 165 | 73 | 18 | 83 | Obesitas |
| 7 | 166 | 58 | 16 | 72 | Normal |
| 8 | 167 | 50 | 13 | 71 | Kurang |
| 9 | 167 | 75 | 16 | 81 | Obesitas |
| 10 | 168 | 50 | 14 | 62 | Kurang |
| 11 | 168 | 52 | 15 | 68 | Kurang |
| 12 | 168 | 73 | 18 | 77 | Obesitas |
| 13 | 169 | 79 | 17 | 84 | Obesitas |
| 14 | 170 | 72 | 17 | 85 | Obesitas |
| 15 | 170 | 125 | 19 | 112 | Obesitas |
| 16 | 172 | 68 | 15 | 79 | Normal |
| 17 | 172 | 75 | 16 | 79 | Obesitas |
| 18 | 173 | 56 | 15 | 66 | Kurang |
| 19 | 173 | 56 | 14 | 72 | Kurang |
| 20 | 177 | 60 | 15 | 71 | Normal |

Dari data di atas, lakukan analisis terhadap data uji seseorang yang memiliki tinggi badan 171 cm, berat badan 63 kg, lingkar lengan bawah 18 cm, dan lingkar perut 76 cm. Pengujian dilakukan dengan nilai K: 3, 5, dan 7.

**JAWAB**

1. Mencari nilai jarak Euclidean dari masing-masing data.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Data ke-** | **Variabel** | | | | **Status Gizi** | **Jarak (di)** |
| **V1** | **V2** | **V3** | **V4** |
| 1 | 159 | 58 | 15 | 70 | Normal | 14,63 |
| 2 | 160 | 54 | 15 | 73 | Normal | 14,83 |
| 3 | 162 | 54 | 15 | 71 | Normal | 14,00 |
| 4 | 163 | 59 | 14 | 74 | Normal | 10,00 |
| 5 | 164 | 53 | 15 | 71 | Normal | 13,53 |
| 6 | 165 | 73 | 18 | 83 | Obesitas | 13,60 |
| 7 | 166 | 58 | 16 | 72 | Normal | 8,37 |
| 8 | 167 | 50 | 13 | 71 | Kurang | 15,33 |
| 9 | 167 | 75 | 16 | 81 | Obesitas | 13,75 |
| 10 | 168 | 50 | 14 | 62 | Kurang | 19,75 |
| 11 | 168 | 52 | 15 | 68 | Kurang | 14,25 |
| 12 | 168 | 73 | 18 | 77 | Obesitas | 10,49 |
| 13 | 169 | 79 | 17 | 84 | Obesitas | 18,03 |
| 14 | 170 | 72 | 17 | 85 | Obesitas | 12,81 |
| 15 | 170 | 125 | 19 | 112 | Obesitas | 71,71 |
| 16 | 172 | 68 | 15 | 79 | Normal | 6,63 |
| 17 | 172 | 75 | 16 | 79 | Obesitas | 12,57 |
| 18 | 173 | 56 | 15 | 66 | Kurang | 12,73 |
| 19 | 173 | 56 | 14 | 72 | Kurang | 9,22 |
| 20 | 177 | 60 | 15 | 71 | Normal | 8,89 |

1. Mengurutkan perhitungan berdasar nilai jarak Euclidean dimulai dari yang terkecil.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Urutan** | **Data ke-** | **Variabel** | | | | **Status Gizi** | **Jarak (di)** |
| **V1** | **V2** | **V3** | **V4** |
| 1 | 16 | 172 | 68 | 15 | 79 | Normal | 6,63 |
| 2 | 7 | 166 | 58 | 16 | 72 | Normal | 8,37 |
| 3 | 20 | 177 | 60 | 15 | 71 | Normal | 8,89 |
| 4 | 19 | 173 | 56 | 14 | 72 | Kurang | 9,22 |
| 5 | 4 | 163 | 59 | 14 | 74 | Normal | 10,00 |
| 6 | 12 | 168 | 73 | 18 | 77 | Obesitas | 10,49 |
| 7 | 17 | 172 | 75 | 16 | 79 | Obesitas | 12,57 |
| 8 | 18 | 173 | 56 | 15 | 66 | Kurang | 12,73 |
| 9 | 14 | 170 | 72 | 17 | 85 | Obesitas | 12,81 |
| 10 | 5 | 164 | 53 | 15 | 71 | Normal | 13,53 |
| 11 | 6 | 165 | 73 | 18 | 83 | Obesitas | 13,60 |
| 12 | 9 | 167 | 75 | 16 | 81 | Obesitas | 13,75 |
| 13 | 3 | 162 | 54 | 15 | 71 | Normal | 14,00 |
| 14 | 11 | 168 | 52 | 15 | 68 | Kurang | 14,25 |
| 15 | 1 | 159 | 58 | 15 | 70 | Normal | 14,63 |
| 16 | 2 | 160 | 54 | 15 | 73 | Normal | 14,83 |
| 17 | 8 | 167 | 50 | 13 | 71 | Kurang | 15,33 |
| 18 | 13 | 169 | 79 | 17 | 84 | Obesitas | 18,03 |
| 19 | 10 | 168 | 50 | 14 | 62 | Kurang | 19,75 |
| 20 | 15 | 170 | 125 | 19 | 112 | Obesitas | 71,71 |

1. Analisis ketika K = 3.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Urutan** | **Data ke-** | **Variabel** | | | | **Status Gizi** | **Jarak (di)** |
| **V1** | **V2** | **V3** | **V4** |
| 1 | 16 | 172 | 68 | 15 | 79 | Normal | 6,63 |
| 2 | 7 | 166 | 58 | 16 | 72 | Normal | 8,37 |
| 3 | 20 | 177 | 60 | 15 | 71 | Normal | 8,89 |

Dari data di atas, diperoleh tiga data terdekat yang ketiganya memiliki status gizi Normal, maka data uji dapat kita klasifikasikan Normal.

1. Analisis ketika K = 5.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Urutan** | **Data ke-** | **Variabel** | | | | **Status Gizi** | **Jarak (di)** |
| **V1** | **V2** | **V3** | **V4** |
| 1 | 16 | 172 | 68 | 15 | 79 | Normal | 6,63 |
| 2 | 7 | 166 | 58 | 16 | 72 | Normal | 8,37 |
| 3 | 20 | 177 | 60 | 15 | 71 | Normal | 8,89 |
| 4 | 19 | 173 | 56 | 14 | 72 | Kurang | 9,22 |
| 5 | 4 | 163 | 59 | 14 | 74 | Normal | 10,00 |

Dari data di atas, diperoleh lima data terdekat di mana empat di antaranya memiliki status gizi Normal dan sisanya berstatus Kurang, maka data uji dapat kita klasifikasikan Normal.

1. Analisis ketika k = 7.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Urutan** | **Data ke-** | **Variabel** | | | | **Status Gizi** | **Jarak (di)** |
| **V1** | **V2** | **V3** | **V4** |
| 1 | 16 | 172 | 68 | 15 | 79 | Normal | 6,63 |
| 2 | 7 | 166 | 58 | 16 | 72 | Normal | 8,37 |
| 3 | 20 | 177 | 60 | 15 | 71 | Normal | 8,89 |
| 4 | 19 | 173 | 56 | 14 | 72 | Kurang | 9,22 |
| 5 | 4 | 163 | 59 | 14 | 74 | Normal | 10,00 |
| 6 | 12 | 168 | 73 | 18 | 77 | Obesitas | 10,49 |
| 7 | 17 | 172 | 75 | 16 | 79 | Obesitas | 12,57 |

Dari data di atas, diperoleh tujuh data terdekat di mana empat di antaranya memiliki status gizi Normal, dua di antaranya berstatus Obesitas dan sisanya berstatus Kurang, maka data uji dapat kita klasifikasikan Normal.