1. Iterasi 1

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Nama** | **Tanggal** | **Waktu** | | | | **Parameter (Satuan Menit)** | | | |
| **Jam Masuk** | **Jam Istirahat** | **Jam Kembali** | **Jam Pulang** | **Mas** | **Ist** | **Kem** | **Pul** |
| 1 | Wirda Ahmad Juliana | 9/3/2021 | 7:37:26 | 9:45:53 | 10:13:53 | 11:32:57 | 37 | 45 | 13 | 32 |
| 2 | Aditya Agusto Putra | 9/3/2021 | 7:37:16 | 9:45:31 | 10:17:05 | 11:32:50 | 37 | 45 | 17 | 32 |
| 3 | Imam Budiman | 9/3/2021 | 7:36:14 | 9:45:27 | 10:15:50 | 11:32:40 | 36 | 45 | 15 | 32 |
| 4 | M. Abdul Maulidin | 9/3/2021 | 7:36:10 | 9:45:19 | 10:14:23 | 11:32:19 | 36 | 45 | 14 | 32 |
| 5 | Fauzie Ilham | 9/3/2021 | 7:34:08 | 9:45:08 | 10:15:29 | 11:32:03 | 34 | 45 | 15 | 32 |
| 6 | Rifki Aditya | 9/3/2021 | 7:34:04 | 9:48:05 | 10:12:50 | 11:31:05 | 34 | 48 | 12 | 31 |
| 7 | Asep Sapudin | 9/3/2021 | 7:34:00 | 9:46:43 | 10:12:46 | 11:30:40 | 34 | 46 | 12 | 30 |
| 8 | Riko Jaelani | 9/3/2021 | 7:33:56 | 9:47:46 | 10:12:40 | 11:30:19 | 33 | 47 | 12 | 30 |
| 9 | Fadilah Dwi Putra | 9/3/2021 | 7:19:52 | 9:46:57 | 10:05:35 | 11:32:48 | 19 | 46 | 5 | 32 |
| 10 | Luki Romadoni | 9/3/2021 | 7:29:48 | 9:45:44 | 10:09:49 | 11:30:40 | 29 | 45 | 9 | 30 |
| … | … | … | … | … | … | … | … | … | … | … |
| 121 | Safitri Septia Sari | 9/11/2021 | 7:04:09 | 9:45:30 | 10:04:54 | 11:35:06 | 4 | 45 | 4 | 35 |

Penjabaran Rumus :

*d1m1*

=

= 36.42801

*d1m2*

=

= 22.75961

*d1m3*

=

= 0

*d2m1*

=

= 37.72267

*d2m2*

=

= 24.77902

*d2m3*

=

= 4

*d3m1*

=

= 36.08324

*d3m2*

=

= 22.86919

*d3m3*

=

= 2.236068

*d4m1*

=

= 35.76311

*d4m2*

=

= 22.36068

*d4m3*

=

= 1.414214

*d5m1*

=

= 34.20526

*d5m2*

=

= 21.23676

*d5m3*

=

= 3.605551

*d6m1*

=

=33.36165

*d6m2*

=

= 19.64688

*d6m3*

=

= 4.472136

*d7m1*

=

= 33.37664

*d7m2*

=

= 19.97498

*d7m3*

=

= 3.872983

*d8m1*

=

= 32.43455

*d8m2*

=

= 19.05256

*d8m3*

=

= 5

*d9m1*

=

= 17.14643

*d9m2*

=

= 4.582576

*d9m3*

=

= 19.72308

*d10m1*

=

= 27.83882

*d10m2*

=

= 14.62874

*d10m3*

=

= 9.165151

…

*d121m1*

=

= 3.16227766

*d121m2*

=

= 13.37908816

*d121m3*

=

= 34.33656943

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Jarak ke centroid | | | Jarak Terdekat |
| C1 | C2 | C3 |
| 1 | 36.4280112 | 22.75961335 | 0 | C3 |
| 2 | 37.72267223 | 24.77902339 | 4 | C3 |
| 3 | 36.08323711 | 22.86919325 | 2.236067977 | C3 |
| 4 | 35.76310948 | 22.36067977 | 1.414213562 | C3 |
| 5 | 34.20526275 | 21.23676058 | 3.605551275 | C3 |
| 6 | 33.36165464 | 19.6468827 | 4.472135955 | C3 |
| 7 | 33.37663854 | 19.97498436 | 3.872983346 | C3 |
| 8 | 32.43454948 | 19.05255888 | 5 | C3 |
| 9 | 17.1464282 | 4.582575695 | 19.72308292 | C2 |
| 10 | 27.83882181 | 14.62873884 | 9.16515139 | C3 |
| … | … | … | … | … |
| 121 | 3.16227766 | 13.37908816 | 34.33656943 | C1 |

|  |  |
| --- | --- |
| BCV | 74.45196 |
| WCV | 7637 |
| Rasio | 0.009749 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| K1 | 6.378378 | 45.43243 | 5.135135 | 32.08108 |
| K2 | 19.66667 | 45.79167 | 8.229167 | 32.85417 |
| K3 | 32.25 | 45.58333 | 11.52778 | 32.77778 |

1. Iterasi 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| K1 | 6.378378 | 45.43243 | 5.135135 | 32.08108 |
| K2 | 19.66667 | 45.79167 | 8.229167 | 32.85417 |
| K3 | 32.25 | 45.58333 | 11.52778 | 32.77778 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Jarak ke centroid | | | Jarak Terdekat |
| C1 | C2 | C3 |
| 1 | 31.61856072 | 18.01559413 | 5.067065652 | C3 |
| 2 | 32.84284246 | 19.4609429 | 7.311151216 | C3 |
| 3 | 31.22418291 | 17.7194328 | 5.202311333 | C3 |
| 4 | 30.92280499 | 17.36193054 | 4.595606463 | C3 |
| 5 | 29.33365152 | 15.89480938 | 4.007997406 | C3 |
| 6 | 28.59792807 | 15.09895025 | 3.505176947 | C3 |
| 7 | 28.54353486 | 15.09481032 | 3.342926012 | C3 |
| 8 | 27.6156708 | 14.19870764 | 3.241679758 | C3 |
| 9 | 12.63535915 | 3.412472019 | 14.79705822 | C2 |
| 10 | 23.04762117 | 9.822336718 | 5.000848693 | C3 |
| … | … | … | … | … |
| 121 | 3.956298895 | 16.38785013 | 29.32590131 | C1 |

|  |  |
| --- | --- |
| BCV | 53.33998 |
| WCV | 3267.535 |
| Rasio | 0.016324 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| K1 | 7.136364 | 45.54545 | 5.227273 | 32.11364 |
| K2 | 20.45946 | 45.59459 | 8.945946 | 32.72973 |
| K3 | 31.75 | 45.725 | 10.975 | 33 |

Penghitungan dihentikan karena nilai rasio baru > nilai rasio lama.

1. BCV, WCV dan Nilai Rasio

Berdasarkan hasil penghitungan menggunakan algoritma K-Means tersebut maka didapat nilai BCV, WCV dan rasio dari seluruh iterasi sebagai berikut :

|  |  |  |
| --- | --- | --- |
| Nilai | Iterasi 1 | Iterasi 2 |
| BCV | 74.45196 | 53.33998 |
| WCV | 7637 | 3267.535 |
| Rasio | 0.009749 | 0.016324 |