**TUGAS RISET OPERASI**

**MASALAH PENUGASAN**

**Nama : Decson Josepho Mirnat Njoto Susanto**

**NIM : A11.2017.10071**

**Kelas : Riset Operasi - 4806**

Soal 1

Berikut diketahui upah per jam (dalam puluhan ribu rupiah) untuk pekerjaan di sebuah toko roti. Karena keahlian dan pengalaman staf berbeda-beda, maka upah juga berbeda-beda.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 65 | 50 | 60 | 70 |
| B | 55 | 45 | 60 | 55 |
| C | 50 | 60 | 75 | 70 |
| D | 40 | 55 | 65 | 60 |

Tentukan pengalokasian optimal pekerjaan ke karyawan, agar diperoleh biaya upah paling murah.

Selesaikan masalah penugasan di atas menggunakan metode Hungarian!.

Soal 2

Karena toko telah membeli mesin pengemas, maka pekerjaan mengemas pada Soal 1 di atas ditiadakan.

Berapa total biaya upah minimum nya sekarang dan staf mana yang tidak dipekerjakan.

Soal 3

Karena staf C tiba-tiba keluar dari pekerjaan, maka jumlah staf pada Soal 1 sekarang hanya ada 3 staf.

Berapa total biaya upah minimum nya sekarang dan pekerjaan mana yang harus dikorbankan.

Soal 4

Diketahui tabel profit pekerjaan apabila dikerjakan oleh staf-staf yang berbeda. Tentukan profit maksimum yang dapat diperoleh dan alokasi staf pada pekerjaan tersebut.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Profit Pekerjaan | |  |
| Staf | I | II | III | IV |
| A | 65 | 50 | 60 | 70 |
| B | 55 | 45 | 60 | 55 |
| C | 50 | 60 | 75 | 70 |
| D | 40 | 55 | 65 | 60 |

**JAWABAN :**

1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 65 - 50 | 50 - 50 | 60 - 50 | 70 – 50 |
| B | 55 - 45 | 45 - 45 | 60 - 45 | 55 – 45 |
| C | 50 - 50 | 60 - 50 | 75 - 50 | 70 – 50 |
| D | 40 - 40 | 55 - 40 | 65 - 40 | 60 – 40 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 15 | 0 | 10 | 20 |
| B | 10 | 0 | 15 | 10 |
| C | 0 | 10 | 25 | 20 |
| D | 0 | 15 | 25 | 20 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 15 | 0 | 10 – 10 | 20 – 10 |
| B | 10 | 0 | 15 -10 | 10 – 10 |
| C | 0 | 10 | 25 – 10 | 20 - 10 |
| D | 0 | 15 | 25 - 10 | 20 - 10 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 15 | 0 | 0 | 10 |
| B | 10 | 0 | 5 | 0 |
| C | 0 | 10 | 15 | 10 |
| D | 0 | 15 | 15 | 10 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 65 | 50 | 60 | 70 |
| B | 55 | 45 | 60 | 55 |
| C | 50 | 60 | 75 | 70 |
| D | 40 | 55 | 65 | 60 |

40 + 45 + 60 + 55 = 200

Jadi total cost nya : Rp 200.000,-

2.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong |  |
| A | 65 - 50 | 50 - 50 | 60 - 50 |  |
| B | 55 - 45 | 45 - 45 | 60 - 45 |  |
| C | 50 - 50 | 60 - 50 | 75 - 50 |  |
| D | 40 - 40 | 55 - 40 | 65 - 40 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong |  |
| A | 15 | 0 | 10 |  |
| B | 10 | 0 | 15 |  |
| C | 0 | 10 | 25 |  |
| D | 0 | 15 | 25 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong |  |
| A | 15 | 0 | 10 – 10 |  |
| B | 10 | 0 | 15 -10 |  |
| C | 0 | 10 | 25 – 10 |  |
| D | 0 | 15 | 25 - 10 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong |  |
| A | 15 | 0 | 0 |  |
| B | 10 | 0 | 5 |  |
| C | 0 | 10 | 15 |  |
| D | 0 | 15 | 15 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong |  |
| A | 65 | 50 | 60 |  |
| B | 55 | 45 | 60 |  |
| C | 50 | 60 | 75 |  |
| D | 40 | 55 | 65 |  |

Staff yang tidak diperkerjakan : Staf C

Total Upah : 40 + 45 + 60 = 145

Total Upah : Rp 145.000,-

3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 65 - 50 | 50 - 50 | 60 - 50 | 70 – 50 |
| B | 55 - 45 | 45 - 45 | 60 - 45 | 55 – 45 |
|  |  |  |  |  |
| D | 40 - 40 | 55 - 40 | 65 - 40 | 60 – 40 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 15 | 0 | 10 | 20 |
| B | 10 | 0 | 15 | 10 |
|  |  |  |  |  |
| D | 0 | 15 | 25 | 20 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 15 | 0 | 10 – 10 | 20 – 10 |
| B | 10 | 0 | 15 -10 | 10 – 10 |
|  |  |  |  |  |
| D | 0 | 15 | 25 - 10 | 20 - 10 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 15 | 0 | 0 | 10 |
| B | 10 | 0 | 5 | 0 |
|  |  |  |  |  |
| D | 0 | 15 | 15 | 10 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pekerjaan | |  |
| Staf | Adonan | Memasak | Memotong | Mengemas |
| A | 65 | 50 | 60 | 70 |
| B | 55 | 45 | 60 | 55 |
|  |  |  |  |  |
| D | 40 | 55 | 65 | 60 |

Total Cost : 40 + 45 + 60 +55 = 200

Jadi total cost nya : Rp 200.000,-

Tidak ada pekerjaan yang di korbankan

4.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Profit Pekerjaan | |  |
| Staf | I | II | III | IV |
| A | 65 | 50 | 60 | 70 |
| B | 55 | 45 | 60 | 55 |
| C | 50 | 60 | 75 | 70 |
| D | 40 | 55 | 65 | 60 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Profit Pekerjaan | |  |
| Staf | I | II | III | IV |
| A | 65 - 40 | 50 - 45 | 60 - 60 | 70 – 55 |
| B | 55 – 40 | 45 - 45 | 60 – 60 | 55 – 55 |
| C | 50 - 40 | 60 - 45 | 75 - 60 | 70 – 55 |
| D | 40 - 40 | 55 - 45 | 65 - 60 | 60 – 55 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Profit Pekerjaan | |  |
| Staf | I | II | III | IV |
| A | 25 | 5 | 0 | 15 |
| B | 15 | 0 | 0 | 0 |
| C | 10 | 15 | 15 | 15 |
| D | 0 | 10 | 5 | 5 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Profit Pekerjaan | |  |
| Staf | I | II | III | IV |
| A | 25 | 5 | 0 | 15 |
| B | 15 | 0 | 0 | 0 |
| C | 10 | 15 | 15 | 15 |
| D | 0 | 10 | 5 | 5 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Profit Pekerjaan | |  |
| Staf | I | II | III | IV |
| A | 65 | 50 | 60 | 70 |
| B | 55 | 45 | 60 | 55 |
| C | 50 | 60 | 75 | 70 |
| D | 40 | 55 | 65 | 60 |

Total profit maksimal : 65 + 60 + 75 + 70 = 270

Total profit maksimal : Rp 270.000,-

Alokasi Staff :

I -> Staf A

II - > Staf C

III - > Staf C

IV -> Staf A