Summary

Assignment 4_myusuf2

Solution 1.

	Task (Unit Shipping Cost)			Unit	Task	Monthly
	Warehouse ($) 1	**Warehouse ($) 2**	**Warehouse ($) 3**	**Production Cost ($)**	**Warehouse D (Dummy)**	**Production Capacity**
Plant A (Assignee)	22	14	30	600	0	100
Plant B (Assignee)	16	20	24	625	0	120
Monthly Demand	80	60	70		10	

Let D = A Dummy variable, the cost of assigning a dummy machine to a location is 0, and that this assignment doesn't exist.
Let Z represent the total shipping cost
Xij represents the number of truckloads shipped from Plant i to warehouse j
We have 6 decision variables Xij to minimize Z

Objective Function:
Min : Min : 622 xA1 + 614 xA2 + 630 xA3 + 641 xB1 + 645 xB2 + 649 xB3 + 0 xAD + 0 xBD;

Constraints:
xA1 + xA2 + xA3 + xAD = 100;
xB1 + xB2 + xB3 + xBD = 120;
xA1 + xB1 = 80;
xA2 + xB2 = 60;
xA3 + xB3 = 70;

xAD + xBD = 10;
Xij >= 0
The final solution has been solved by R program and that there is a total cost of $132,790, the Dummy Warehouse will have no allocation from iether Plant A or Plant B

```
##To solve the LP.
```{r}
solve(Heartstart)
```
```

```
[1] 0
```

```
##To compute the objective function value.
```{r}
get.objective(Heartstart)
```
```

```
[1] 132790
```

```
##To compute the values of decision variables.
```{r}
get.variables(Heartstart)
```
```

```
[1]  0 60 40 80  0 30  0 10
```

```
##To compute the values of constraints.
```{r}
get.constraints(Heartstart)
```
```

```
[1] 100 120  80  60  70  10
```

Solution 2

OBJECTIVE FUNCTION

Min Z = 1.52 X14 + 1.60 X15 + 1.40 X16 + 1.70 X24 + 1.63 X25 + 1.55 X26 + 1.45 X34 + 1.57 X35 + 1.30 X36 + 5.15 X47 + 5.69 X48 + 6.13 X49 + 5.63 X410 + 5.80 X411 + 5.12 X57 + 5.47 X58 + 6.05 X59 + 6.12 X510 + 5.71 X511 + 5.32 X67 + 6.16 X68 + 6.25 X69 + 6.17 X610 + 5.87 X611;

SUBJECT TO THE CONSTRAINTS

x14 + x15 + x16 = 93;
x24 + x25 + x26 = 88;

x34 + x35 + x36 = 95;
x47 + x57 + x67 = 30;
x48 + x58 + x68 = 57;
x49 + x59 + x69 = 48;
x410 + x510 + x610 = 91;
x411 + x511 + x611 = 48;
x412 + x512 + x612 = 2;

x14 + x24 + x34 - x47 - x48 - x49 - x410 - x411 - x412 = 0;
x15 + x25 + x35 - x57 - x58 - x59 - x510 - x511 - x512 = 0;
x16 + x26 + x36 - x67 - x68 - x69 - x610 - x611 - x612 = 0;x

```
##To solve the LP.
```{r}
solve(Oil)
```
```

```
[1] 0
```

```
##To compute the objective function value.
```{r}
get.objective(Oil)
```
```

```
[1] 1966.68
```

```
##To compute the values of decision variables.
```{r}
get.variables(Oil)
```
```

```
 [1] 93  0  0  0 88  0 28  0 67 30  0  0 91  0  0 57 31  0  0  0  0 17  0 48  0  0  2
```

```
##To compute the values of constraints.
```{r}
get.constraints(Oil)
```
```