Assignment 1

DUCKWORTH – LEWIS METHOD

Submitted By: Nirmalya Gayen, Sr. No. 19464

Steps:

1. **Filter**: after reading the file "04_cricket_1999to2011.csv"
   I have selected the rows with `Innings` == 1 and next selected the Match IDs which were played for 50 overs (count(`Over`) == 50) or all players got out before 50th over (min(`Wickets.in.Hand`) == 0)
2. **Data Selection**: Then I have selected the columns [`Match`, `Over, Runs`, `Wickets.in.Hand`]
3. **Data Cleaning**: In some matches (Ex. Match: 65193) *`Total.Runs` column has inconsistent data* and hence` Innings.Total.Runs` and `Runs.Remaining` has inconsistency. So, I had to generate those columns from `Runs` column.
4. **Initialize Z0 and L**: The initial values of Z0 for each wicket is the mean of maximum run at that wicket for all matches.
   Or, for each `Wickets.in.Hand` the mean of `Runs.Remaining` for all matches.

wicket in hand	1	2	3	4	5	6	7	8	9	10
Z0 init	8.09	16.34	29.17	45.44	67.88	98.12	134.75	172.75	210.50	247.62

   Set L = 0
5. **Minimize MSE**: for the variables Z0 and L calculate MSE for all Overs Remaining and Average Runs Remaining using method L-BFGS-B

Results:

L: 10.39994826561344
MSE: 1371.942963764505

wicket in hand	1	2	3	4	5	6	7	8	9	10
Z0	14.34	29.94	57.91	91.31	117.06	154.00	184.38	229.62	261.00	305.50