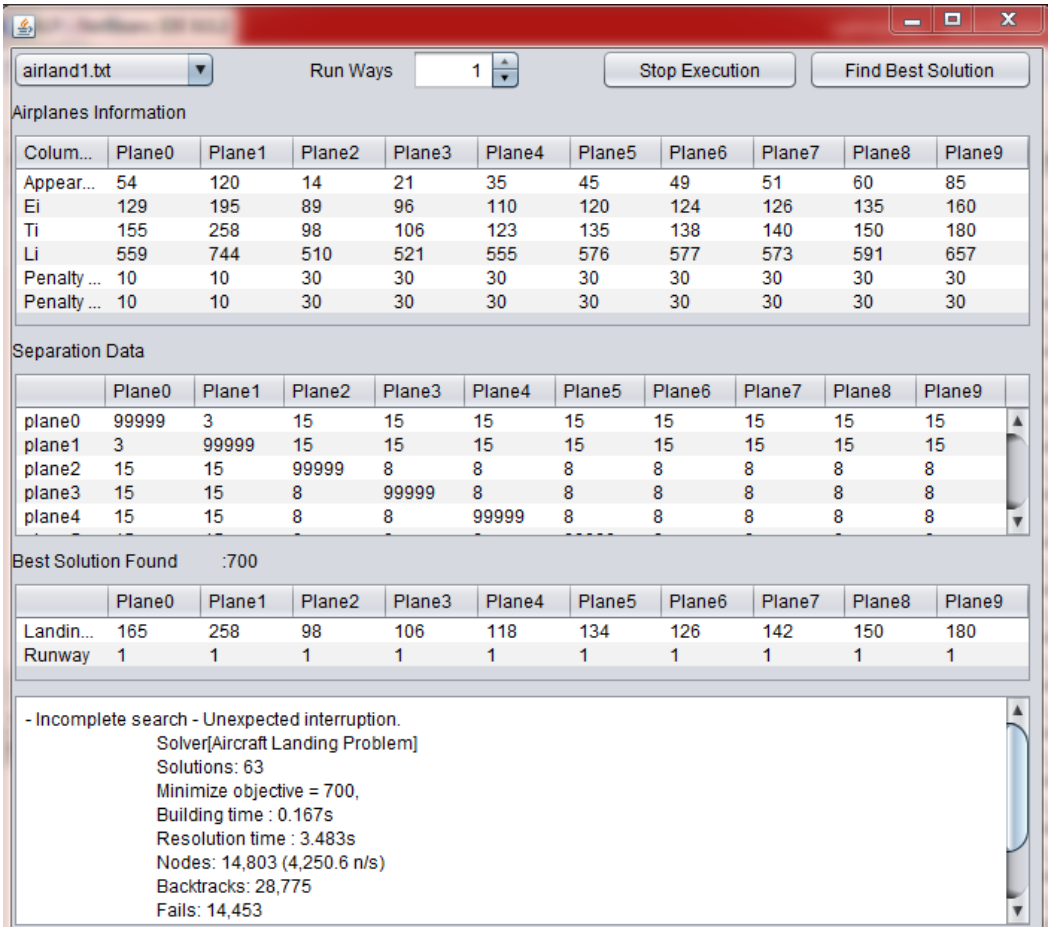
LNS, Large Neighborhood Search, Aircraft Landing Problem application.

One Runway Case

Airland1.txt , one runway



airland1.txt | Run Ways 1 | Stop Execution | Find Best Solution

Airplanes Information

Colum...	Plane0	Plane1	Plane2	Plane3	Plane4	Plane5	Plane6	Plane7	Plane8	Plane9
Appear...	54	120	14	21	35	45	49	51	60	85
Ei	129	195	89	96	110	120	124	126	135	160
Ti	155	258	98	106	123	135	138	140	150	180
Li	559	744	510	521	555	576	577	573	591	657
Penalty ...	10	10	30	30	30	30	30	30	30	30
Penalty ...	10	10	30	30	30	30	30	30	30	30

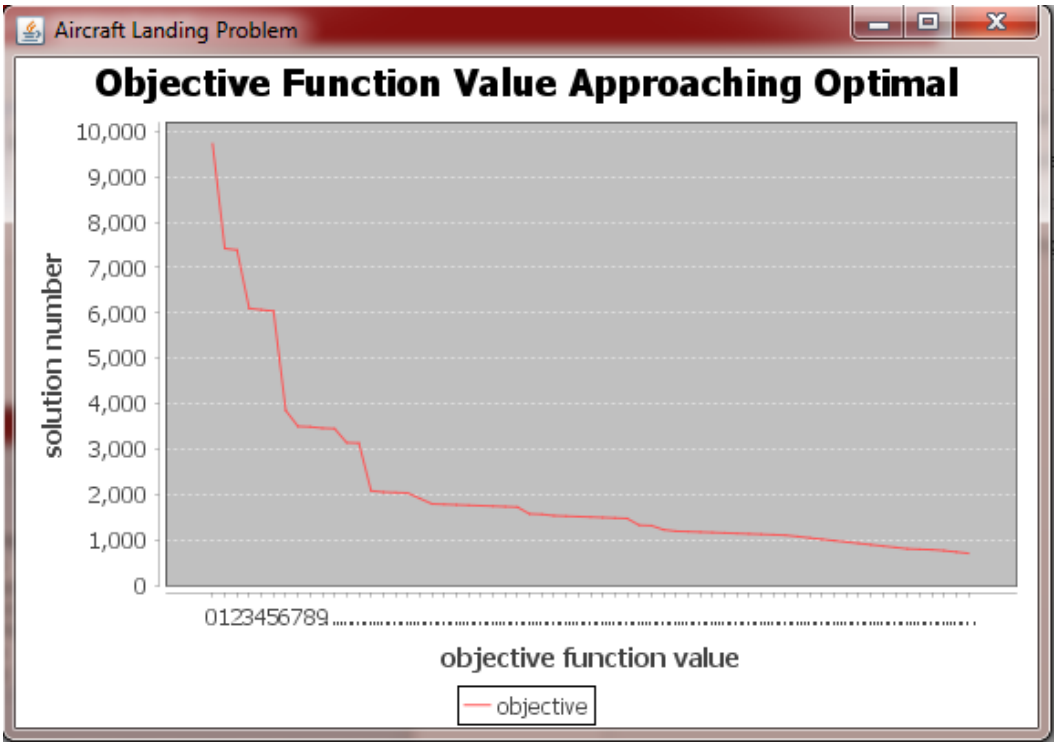
Separation Data

	Plane0	Plane1	Plane2	Plane3	Plane4	Plane5	Plane6	Plane7	Plane8	Plane9
plane0	99999	3	15	15	15	15	15	15	15	15
plane1	3	99999	15	15	15	15	15	15	15	15
plane2	15	15	99999	8	8	8	8	8	8	8
plane3	15	15	8	99999	8	8	8	8	8	8
plane4	15	15	8	8	99999	8	8	8	8	8

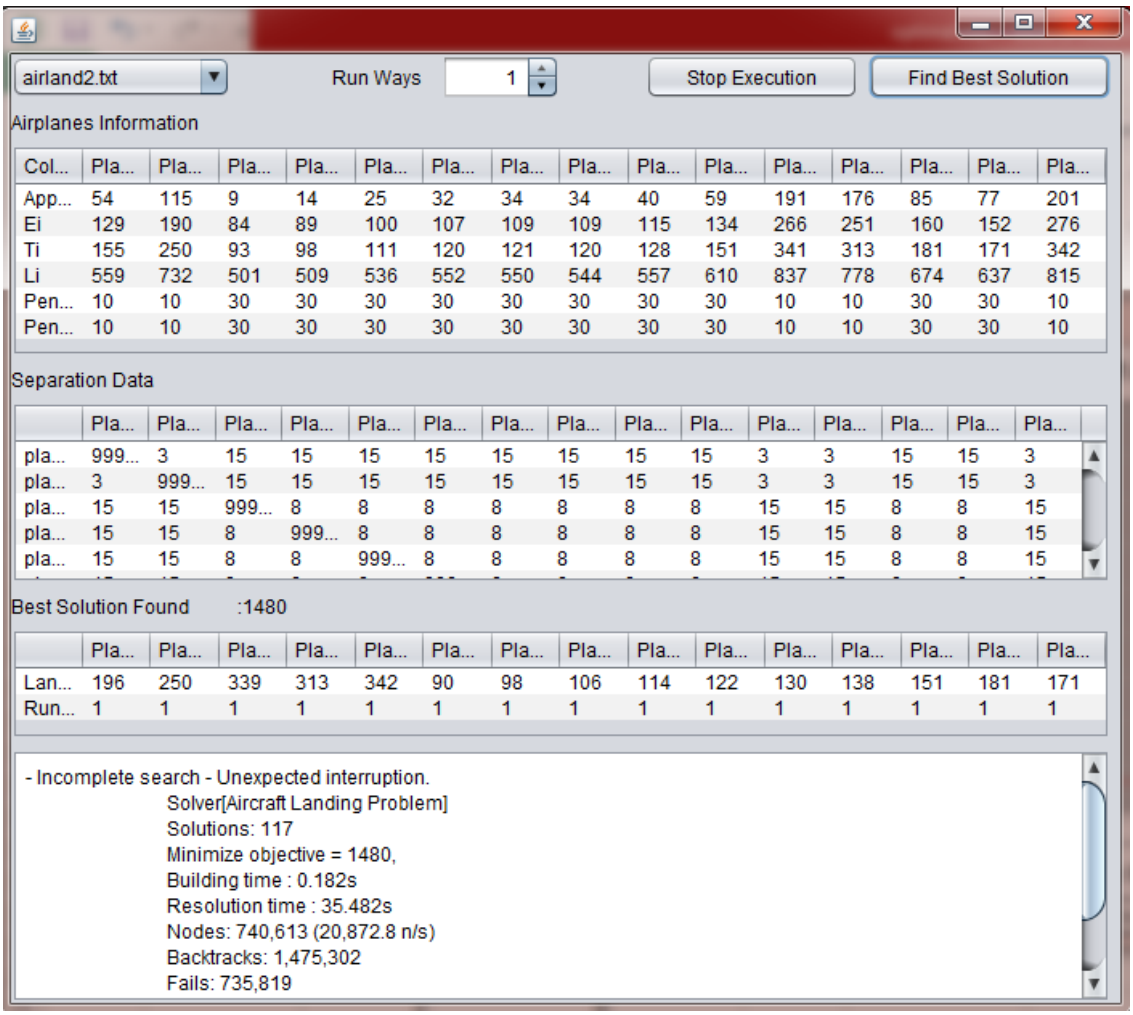
Best Solution Found :700

	Plane0	Plane1	Plane2	Plane3	Plane4	Plane5	Plane6	Plane7	Plane8	Plane9
Landin...	165	258	98	106	118	134	126	142	150	180
Runway	1	1	1	1	1	1	1	1	1	1

```
- Incomplete search - Unexpected interruption.
        Solver[Aircraft Landing Problem]
        Solutions: 63
        Minimize objective = 700,
        Building time : 0.167s
        Resolution time : 3.483s
        Nodes: 14,803 (4,250.6 n/s)
        Backtracks: 28,775
        Fails: 14,453
```



Airland2.txt one runway case



airland2.txt | Run Ways 1 | Stop Execution | Find Best Solution

Airplanes Information

Col...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...
App...	54	115	9	14	25	32	34	34	40	59	191	176	85	77	201
Ei	129	190	84	89	100	107	109	109	115	134	266	251	160	152	276
Ti	155	250	93	98	111	120	121	120	128	151	341	313	181	171	342
Li	559	732	501	509	536	552	550	544	557	610	837	778	674	637	815
Pen...	10	10	30	30	30	30	30	30	30	30	10	10	30	30	10
Pen...	10	10	30	30	30	30	30	30	30	30	10	10	30	30	10

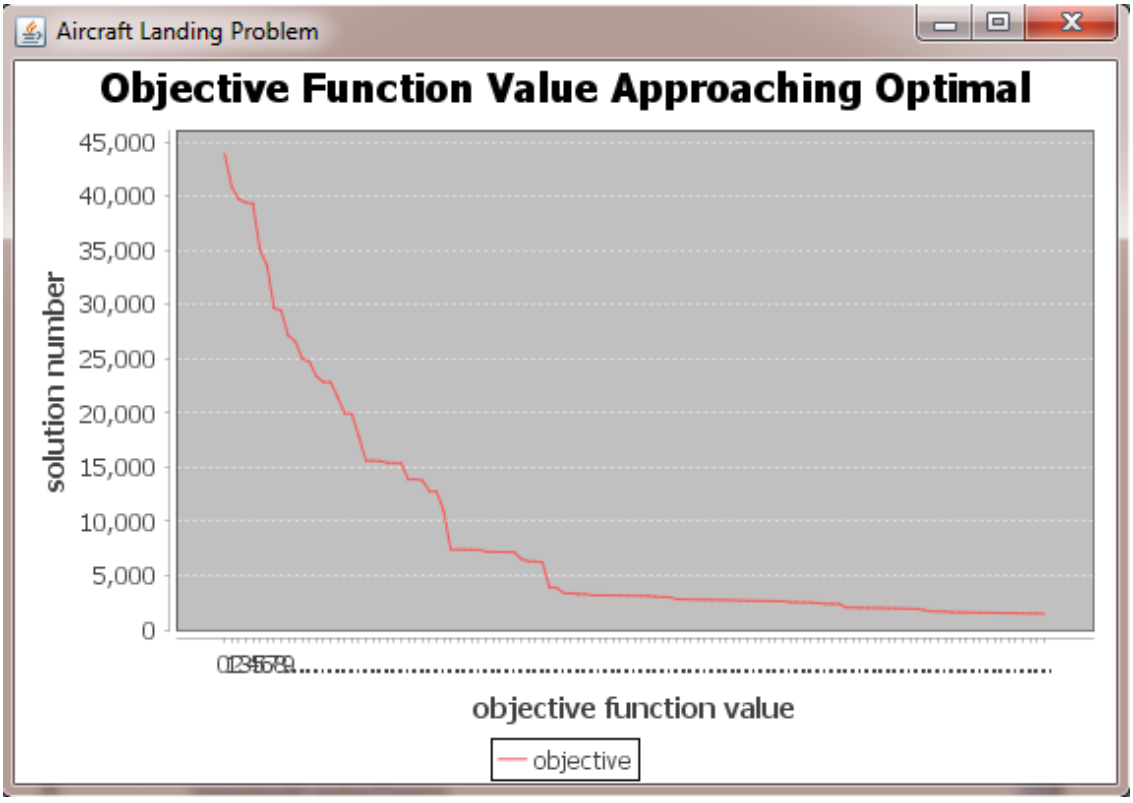
Separation Data

	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...
pla...	999...	3	15	15	15	15	15	15	15	15	3	3	15	15	3
pla...	3	999...	15	15	15	15	15	15	15	15	3	3	15	15	3
pla...	15	15	999...	8	8	8	8	8	8	8	15	15	8	8	15
pla...	15	15	8	999...	8	8	8	8	8	8	15	15	8	8	15
pla...	15	15	8	8	999...	8	8	8	8	8	15	15	8	8	15

Best Solution Found :1480

	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...	Pla...
Lan...	196	250	339	313	342	90	98	106	114	122	130	138	151	181	171
Run...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

```
- Incomplete search - Unexpected interruption.
        Solver[Aircraft Landing Problem]
        Solutions: 117
        Minimize objective = 1480,
        Building time : 0.182s
        Resolution time : 35.482s
        Nodes: 740,613 (20,872.8 n/s)
        Backtracks: 1,475,302
        Fails: 735,819
```



Airland3.txt one runway

airland3.txt | Run Ways 1 | Stop Execution | Find Best Solution

Airplanes Information

C...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...
A...	0	82	59	28	126	20	110	23	42	42	57	39	186	175	139	235	194	162	69	76
Ei	75	157	134	103	201	95	185	98	117	117	132	114	261	250	214	310	269	237	144	151
Ti	82	197	160	117	261	106	229	108	132	130	149	126	336	316	258	409	338	287	160	169
Li	486	628	561	565	735	524	664	523	578	569	615	551	834	790	688	967	818	726	607	624
P...	30	10	10	30	10	30	10	30	30	30	30	30	10	10	10	10	10	10	30	30
P...	30	10	10	30	10	30	10	30	30	30	30	30	10	10	10	10	10	10	30	30

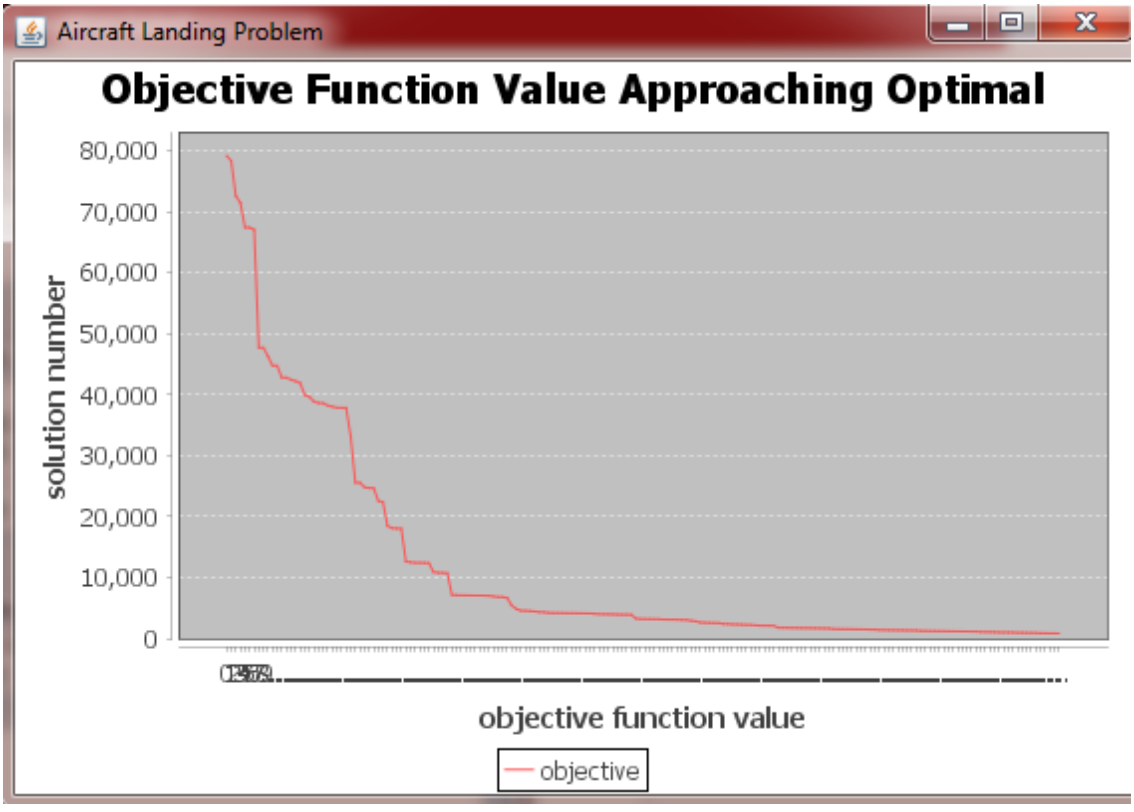
Separation Data

	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...
pl...	9...	15	15	8	15	8	15	8	8	8	8	8	15	15	15	15	15	15	8	8
pl...	15	9...	3	15	3	15	3	15	15	15	15	15	3	3	3	3	3	3	15	15
pl...	15	3	9...	15	3	15	3	15	15	15	15	15	3	3	3	3	3	3	15	15
pl...	8	15	15	9...	15	8	15	8	8	8	8	8	15	15	15	15	15	15	8	8
pl...	15	3	3	15	9...	15	3	15	15	15	15	15	3	3	3	3	3	3	15	15

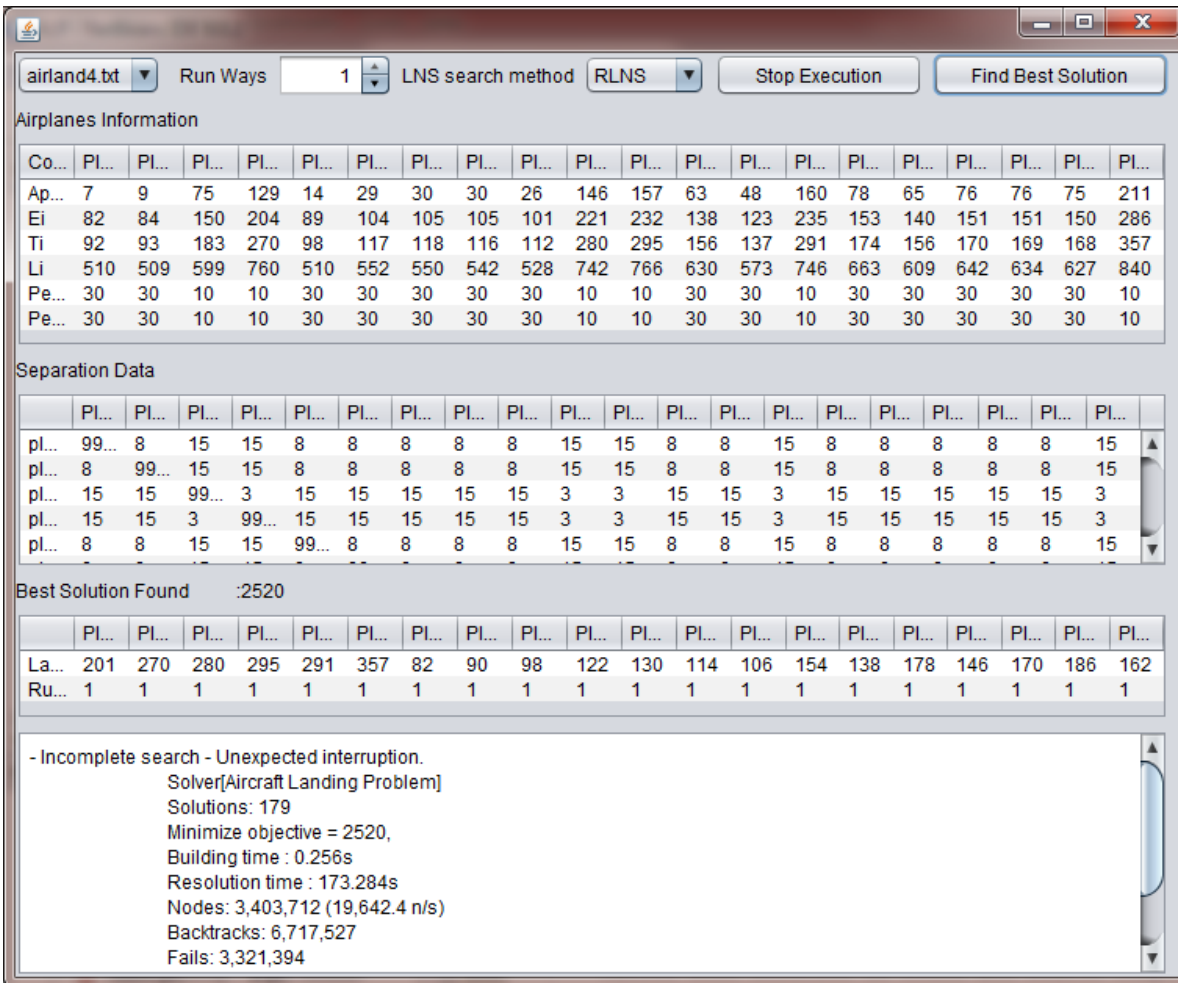
Best Solution Found :820

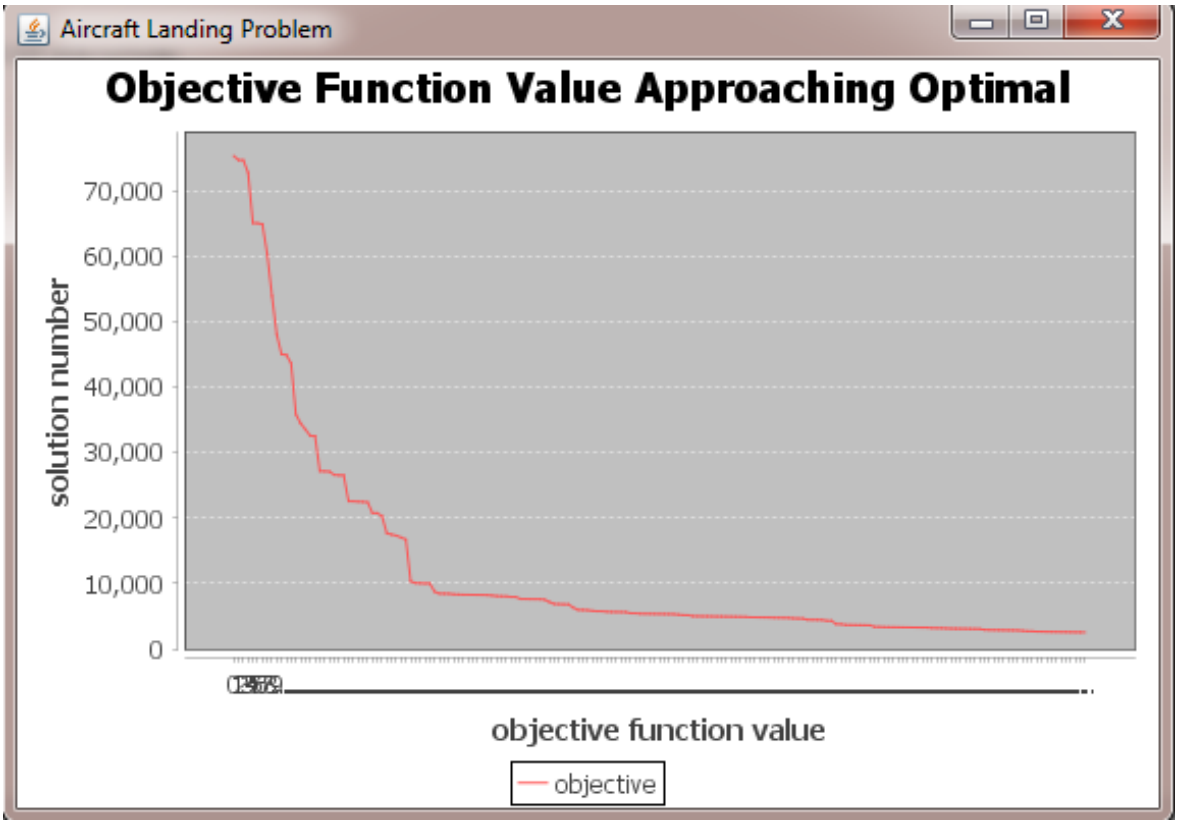
	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...	Pl...
L...	197	184	261	229	336	316	258	409	339	287	82	117	100	108	133	141	149	125	160	169
R...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

- Incomplete search - Unexpected interruption.
Solver[Aircraft Landing Problem]
Solutions: 182
Minimize objective = 820,
Building time : 0.210s
Resolution time : 131.087s
Nodes: 2,234,047 (17,042.5 n/s)
Backtracks: 4,435,533
Fails: 2,208,004

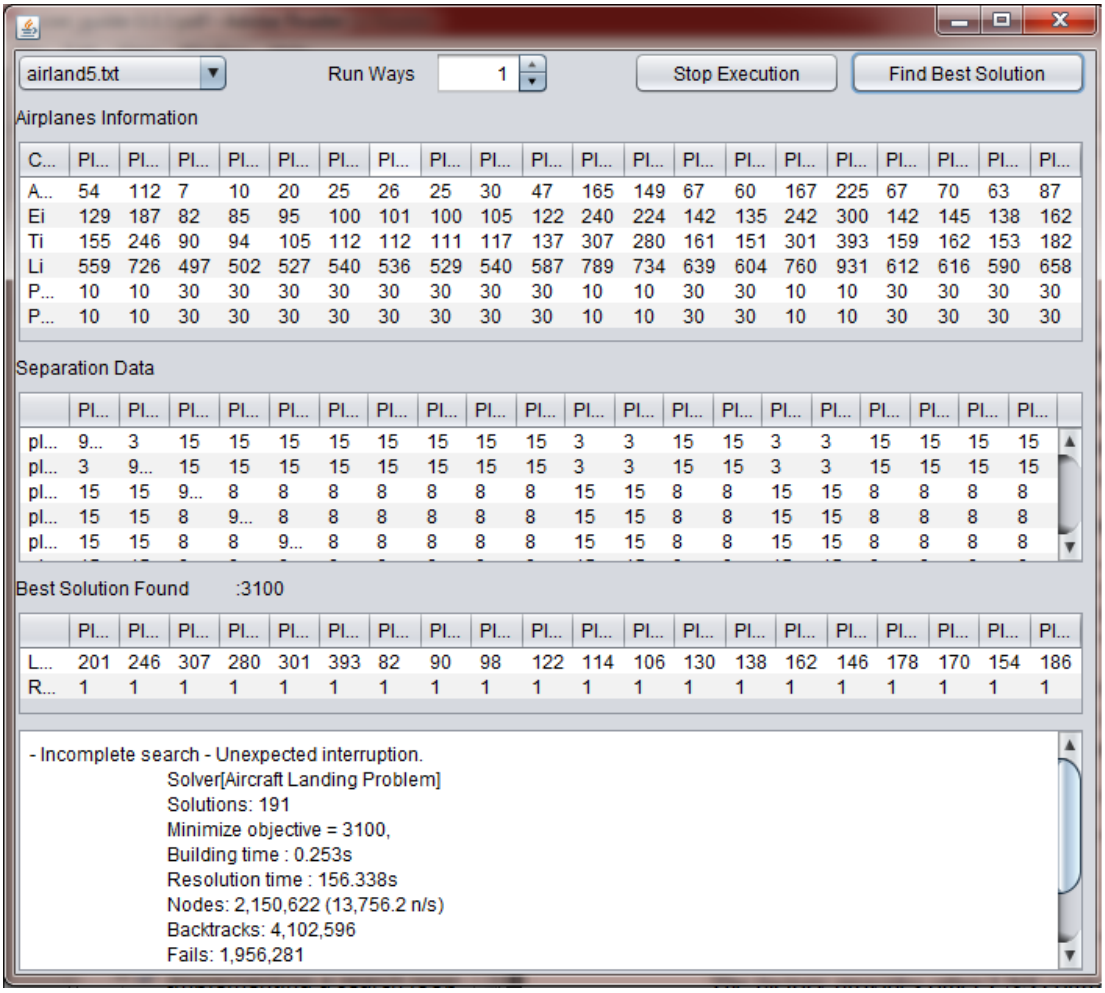


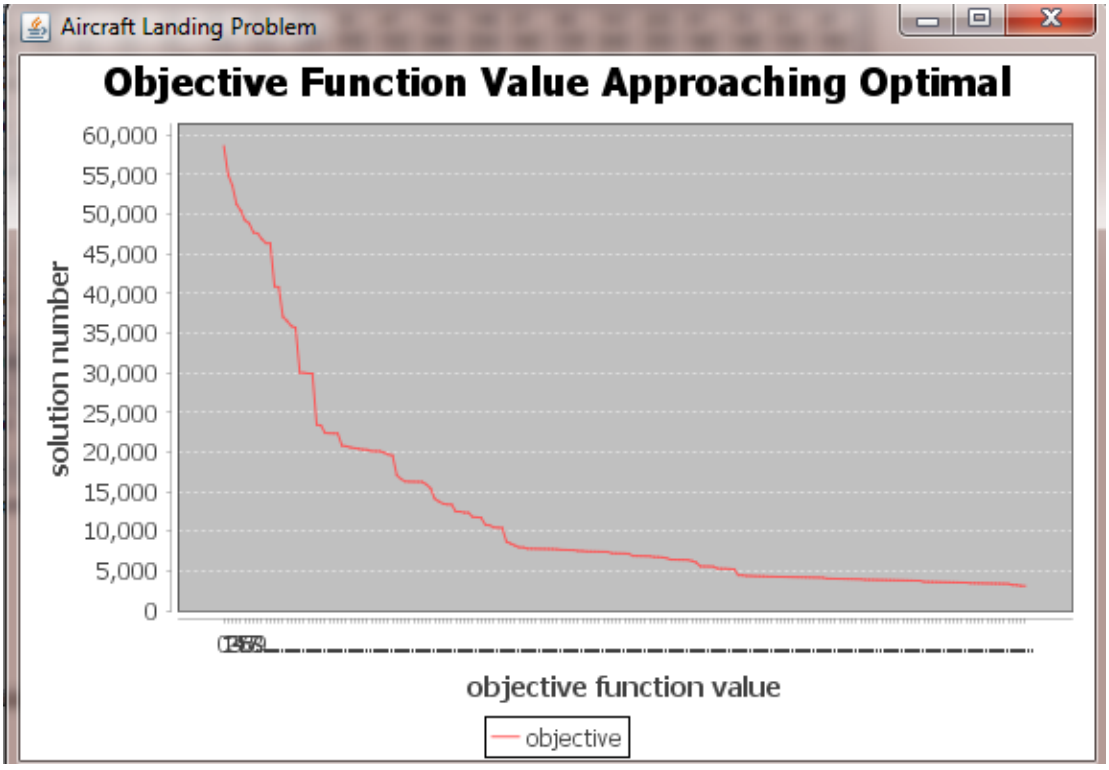
Airland4.txt one runway



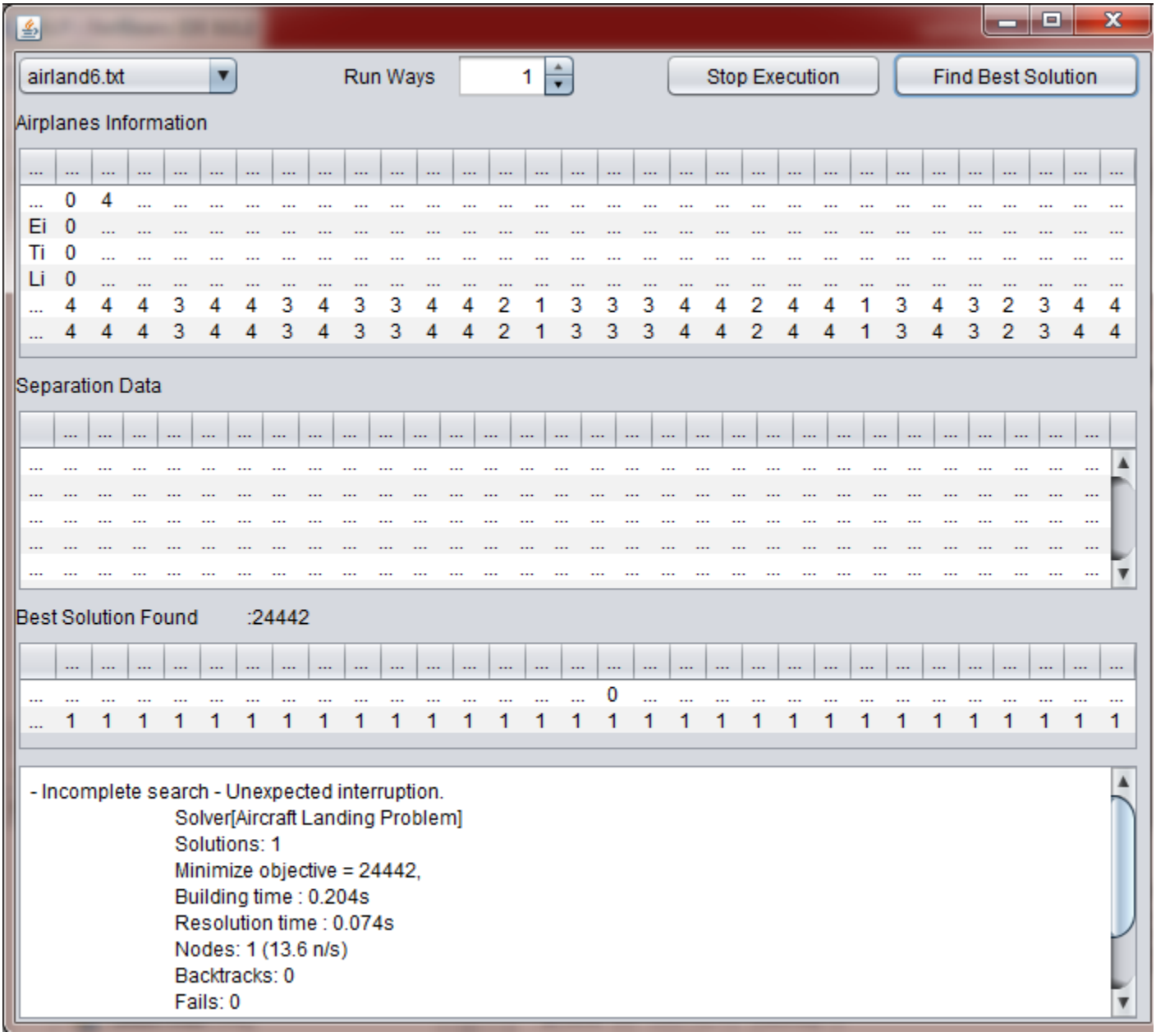


Airland5.txt one runway



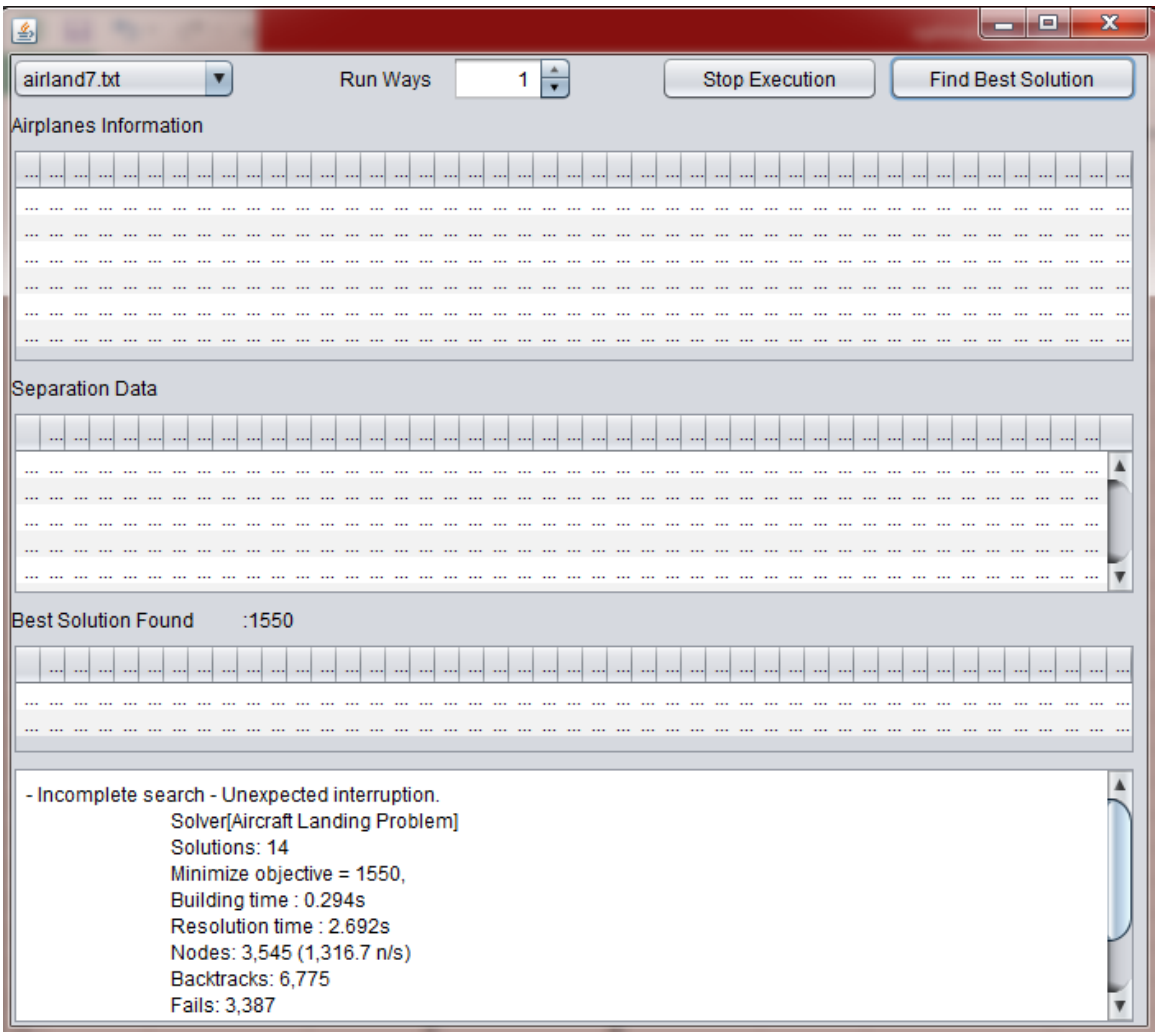


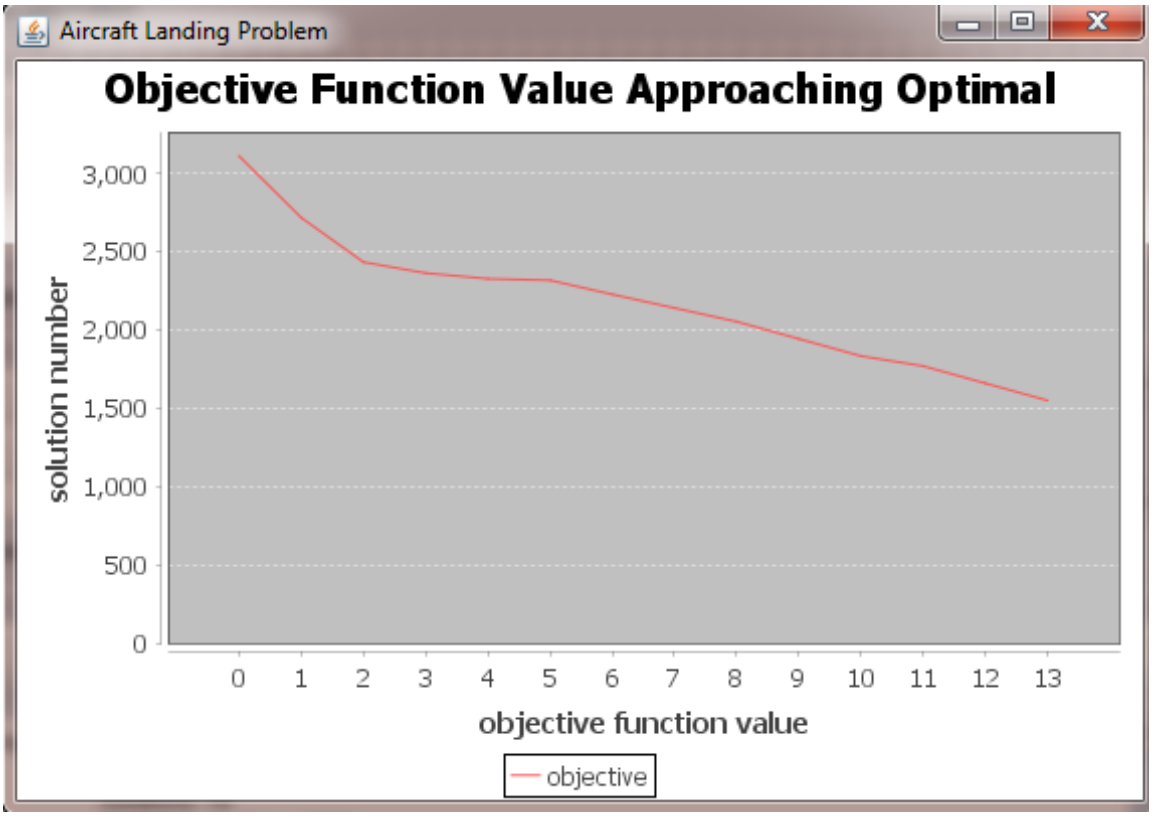
Airland6.txt one runway



One iteration to optimal.

Airland7.txt





Airline8.txt one runway.