Results

| Test | Input sizes | | Exact agorithm | | | | | | Heuristic algorithm | | | | | |
| | | | CP | | | BaB | | | BFS | | | Greedy | | |
Test	n_items	n_trucks	n_trucks_used	cost	running_time	n_trucks_used	cost	running_time	n_trucks_used	cost	running_time	n_trucks_used	cost	running_time
Phase_1/input_ 1.txt	11	11	3	379	1.966683865	3	440	0.00193	3	440	0.000599	3	480	0.000595
Phase_1/input_ 2.txt	12	12	3	525	2.271491766	3	586	0.00382	3	586	0.00054	3	587	0.000228
Phase_1/input_ 3.txt	13	13	2	459	0.343653679	3	637	0.003006	3	637	0.000526	3	637	0.000256
Phase_1/input_ 4.txt	14	14	5	650	0.496277809	6	777	0.017988	6	777	0.00094	6	777	0.000207
Phase_1/input_ 5.txt	15	15	3	513	2.441635847	4	624	0.017779	4	624	0.0007	4	738	0.000188
Phase_1/input_ 6.txt	16	16	4	638	1.357476234	4	745	0.013308	4	745	0.001061	4	745	0.000206
Phase_1/input_ 7.txt	17	17	5	929	39.27156782	5	1098	0.089258	6	1124	0.001593	7	1394	0.000234
Phase_1/input_ 8.txt	18	18	6	1169	1.302475929	7	1323	0.179056	7	1323	0.001843	6	1388	0.000268
Phase_1/input_ 9.txt	19	19	3	508	170.0988472	4	618	0.019588	4	618	0.001418	4	618	0.000241
Phase_1/input_10.txt	20	20	4	626	300.5817409	4	626	0.016302	4	739	0.001687	5	840	0.000264
Phase_1/input_11.txt	21	21	5	1023	93.13276863	6	1297	0.279418	5	1180	0.002245	6	1400	0.000275
Phase_1/input_12.txt	22	22	6	1280	300.6107924	6	1556	0.733084	7	1601	0.003003	8	1812	0.000307
Phase_1/input_13.txt	23	23	6	937	300.6701977	7	1137	1.5224	6	958	0.00379	7	1384	0.000304
Phase_1/input_14.txt	24	24	7	1367	300.7935696	8	1547	2.41217	7	1556	0.005307	9	1882	0.000445
Phase_1/input_15.txt	25	25	6	1199	300.6030931	7	1464	7.50056	8	1447	0.006407	8	1531	0.000356
Phase_1/input_16.txt	26	26	N/A	N/A	N/A	8	1938	10.5518	8	1853	0.008196	9	2115	0.000401
Phase_1/input_17.txt	27	27	N/A	N/A	N/A	10	2851	107.306	11	3004	0.008972	12	3392	0.000434
Phase_1/input_18.txt	28	28	N/A	N/A	N/A	7	1400	23.8025	7	1400	0.006065	6	1826	0.000397
Phase_1/input_19.txt	29	29	N/A	N/A	N/A	6	1620	33.118	7	1585	0.006674	7	1689	0.000439
Phase_1/input_20.txt	30	30	N/A	N/A	N/A	N/A	N/A	N/A	11	2444	0.010007	12	2666	0.000517
Phase_1/input_21.txt	31	31	N/A	N/A	N/A	6	1768	23.2625	7	1881	0.008157	7	2032	0.000456
Phase_1/input_22.txt	32	32	N/A	N/A	N/A	8	1557	35.8825	8	1645	0.008687	8	1738	0.000498
Phase_1/input_23.txt	33	33	N/A	N/A	N/A	8	1394	113.718	8	1394	0.009524	9	1673	0.000506
Phase_1/input_24.txt	34	34	N/A	N/A	N/A	N/A	N/A	N/A	8	1858	0.009818	8	1887	0.000788
Phase_1/input_25.txt	35	35	N/A	N/A	N/A	N/A	N/A	N/A	12	2774	0.014589	14	3208	0.000687
Phase_1/input_26.txt	36	36	N/A	N/A	N/A	N/A	N/A	N/A	9	1602	0.011048	9	1602	0.000548
Phase_1/input_27.txt	37	37	N/A	N/A	N/A	N/A	N/A	N/A	10	1842	0.013214	11	2189	0.000605
Phase_1/input_28.txt	38	38	N/A	N/A	N/A	N/A	N/A	N/A	12	2515	0.018492	13	2576	0.000658
Phase_1/input_29.txt	39	39	N/A	N/A	N/A	N/A	N/A	N/A	9	1970	0.018521	9	2056	0.000645
Phase_1/input_30.txt	40	40	N/A	N/A	N/A	N/A	N/A	N/A	10	2380	0.018935	12	2668	0.000699
Phase_1/input_31.txt	41	41	N/A	N/A	N/A	N/A	N/A	N/A	11	2257	0.019793	11	2270	0.000722
Phase_1/input_32.txt	42	42	N/A	N/A	N/A	N/A	N/A	N/A	10	1642	0.018541	11	1764	0.000691
Phase_1/input_33.txt	43	43	N/A	N/A	N/A	N/A	N/A	N/A	11	2038	0.021075	14	2390	0.000703
Phase_1/input_34.txt	44	44	N/A	N/A	N/A	N/A	N/A	N/A	13	2414	0.029004	13	2480	0.000803
Phase_1/input_35.txt	45	45	N/A	N/A	N/A	N/A	N/A	N/A	11	1866	0.0247	11	1871	0.000751
Phase_1/input_36.txt	46	46	N/A	N/A	N/A	N/A	N/A	N/A	15	3830	0.037822	17	4312	0.000877
Phase_1/input_37.txt	47	47	N/A	N/A	N/A	N/A	N/A	N/A	13	1920	0.03407	13	1972	0.000819
Phase_1/input_38.txt	48	48	N/A	N/A	N/A	N/A	N/A	N/A	12	2328	0.058766	13	2819	0.000843
Phase_1/input_39.txt	49	49	N/A	N/A	N/A	N/A	N/A	N/A	11	1892	0.029398	11	1892	0.000844
Phase_1/input_40.txt	50	50	N/A	N/A	N/A	N/A	N/A	N/A	12	2400	0.038673	13	2566	0.000893
Phase_2/input_0.txt	100	100	N/A	N/A	N/A	N/A	N/A	N/A	21	4352	0.360696	22	4539	0.002581
Phase_2/input_1.txt	100	235	N/A	N/A	N/A	N/A	N/A	N/A	23	3342	0.90581	23	3448	0.003002
Phase_2/input_2.txt	100	134	N/A	N/A	N/A	N/A	N/A	N/A	28	5218	0.721128	29	5378	0.003107
Phase_2/input_3.txt	100	122	N/A	N/A	N/A	N/A	N/A	N/A	31	6432	0.70781	33	6752	0.0031
Phase_2/input_4.txt	100	112	N/A	N/A	N/A	N/A	N/A	N/A	27	5543	0.524375	28	5861	0.00269

Phase_2/input_ 5.txt	100	223	N/A	N/A	N/A	N/A	N/A	N/A	22	3277	0.82329	23	3598	0.002917
Phase_2/input_ 6.txt	100	271	N/A	N/A	N/A	N/A	N/A	N/A	29	4571	1.48487	29	4598	0.00346
Phase_2/input_ 7.txt	100	235	N/A	N/A	N/A	N/A	N/A	N/A	20	3100	0.834511	21	3289	0.00304
Phase_2/input_ 8.txt	100	100	N/A	N/A	N/A	N/A	N/A	N/A	25	4904	0.374629	26	5296	0.002496
Phase_2/input_ 9.txt	100	188	N/A	N/A	N/A	N/A	N/A	N/A	25	3819	0.838167	26	3896	0.002996
Phase_2/input_10.txt	100	284	N/A	N/A	N/A	N/A	N/A	N/A	23	4157	1.24108	25	4463	0.003432
Phase_2/input_11.txt	110	203	N/A	N/A	N/A	N/A	N/A	N/A	25	3768	0.922542	25	3798	0.003366
Phase_2/input_12.txt	120	237	N/A	N/A	N/A	N/A	N/A	N/A	31	4425	1.72192	32	4609	0.004157
Phase_2/input_13.txt	130	130	N/A	N/A	N/A	N/A	N/A	N/A	38	6616	1.23847	40	7030	0.004339
Phase_2/input_14.txt	140	272	N/A	N/A	N/A	N/A	N/A	N/A	30	5001	2.2916	32	5240	0.005156
Phase_2/input_15.txt	150	217	N/A	N/A	N/A	N/A	N/A	N/A	36	7057	2.85681	36	7271	0.005512
Phase_2/input_16.txt	160	168	N/A	N/A	N/A	N/A	N/A	N/A	48	9911	3.12711	50	10311	0.006805
Phase_2/input_17.txt	170	220	N/A	N/A	N/A	N/A	N/A	N/A	45	9251	4.38135	47	9847	0.007363
Phase_2/input_18.txt	180	296	N/A	N/A	N/A	N/A	N/A	N/A	50	8056	7.43123	53	8476	0.00821
Phase_2/input_19.txt	190	230	N/A	N/A	N/A	N/A	N/A	N/A	50	11069	5.83671	51	11316	0.008738
Phase_2/input_20.txt	200	299	N/A	N/A	N/A	N/A	N/A	N/A	45	7019	6.65435	45	7141	0.008561
Phase_2/input_21.txt	210	283	N/A	N/A	N/A	N/A	N/A	N/A	56	9438	8.94893	58	9586	0.010014
Phase_2/input_22.txt	220	256	N/A	N/A	N/A	N/A	N/A	N/A	48	9780	8.00982	50	9984	0.010272
Phase_2/input_23.txt	230	236	N/A	N/A	N/A	N/A	N/A	N/A	60	11122	9.61699	62	11447	0.011924
Phase_2/input_24.txt	240	261	N/A	N/A	N/A	N/A	N/A	N/A	58	11471	11.7635	58	11687	0.013761
Phase_2/input_25.txt	250	296	N/A	N/A	N/A	N/A	N/A	N/A	65	12657	16.2691	66	13095	0.01438
Phase_2/input_26.txt	260	285	N/A	N/A	N/A	N/A	N/A	N/A	66	12233	14.7325	67	12572	0.015034
Phase_2/input_27.txt	270	277	N/A	N/A	N/A	N/A	N/A	N/A	68	12133	15.3216	68	12314	0.015156
Phase_2/input_28.txt	280	296	N/A	N/A	N/A	N/A	N/A	N/A	70	13256	19.2155	72	13485	0.01663
Phase_2/input_29.txt	290	290	N/A	N/A	N/A	N/A	N/A	N/A	68	13981	20.3142	71	14493	0.017722
Phase_2/input_30.txt	300	300	N/A	N/A	N/A	N/A	N/A	N/A	79	14585	24.6525	82	14872	0.02013
Phase_2/input_31.txt	202	284	N/A	N/A	N/A	N/A	N/A	N/A	55	9495	8.38776	57	9845	0.009985
Phase_2/input_32.txt	160	190	N/A	N/A	N/A	N/A	N/A	N/A	42	7871	3.02305	42	7894	0.00636
Phase_2/input_33.txt	210	288	N/A	N/A	N/A	N/A	N/A	N/A	48	8438	7.83647	51	8898	0.009573
Phase_2/input_34.txt	103	141	N/A	N/A	N/A	N/A	N/A	N/A	27	5723	0.713942	28	6191	0.003096
Phase_2/input_35.txt	134	143	N/A	N/A	N/A	N/A	N/A	N/A	38	7034	1.67471	38	7202	0.004827
Phase_2/input_36.txt	238	278	N/A	N/A	N/A	N/A	N/A	N/A	53	9231	10.3219	56	9625	0.011651
Phase_2/input_37.txt	262	269	N/A	N/A	N/A	N/A	N/A	N/A	65	12994	14.634	66	13414	0.015959
Phase_2/input_38.txt	193	217	N/A	N/A	N/A	N/A	N/A	N/A	46	8357	5.07394	46	8567	0.009003
Phase_2/input_39.txt	103	217	N/A	N/A	N/A	N/A	N/A	N/A	25	4263	0.979595	27	4412	0.003357
Phase_2/input_40.txt	296	296	N/A	N/A	N/A	N/A	N/A	N/A	72	13590	22.7413	72	13904	0.017172
Phase_2/input_41.txt	205	268	N/A	N/A	N/A	N/A	N/A	N/A	52	8818	7.79164	52	8848	0.00937
Phase_2/input_42.txt	292	299	N/A	N/A	N/A	N/A	N/A	N/A	71	13557	20.8602	73	13976	0.017078
Phase_2/input_43.txt	274	290	N/A	N/A	N/A	N/A	N/A	N/A	70	13857	17.9614	71	14270	0.014842
Phase_2/input_44.txt	107	289	N/A	N/A	N/A	N/A	N/A	N/A	27	3824	1.48356	28	3955	0.00342
Phase_2/input_45.txt	256	262	N/A	N/A	N/A	N/A	N/A	N/A	57	11102	12.5021	57	11263	0.012047
Phase_2/input_46.txt	124	283	N/A	N/A	N/A	N/A	N/A	N/A	28	4405	1.8928	28	4503	0.004022
Phase_2/input_47.txt	291	293	N/A	N/A	N/A	N/A	N/A	N/A	69	14779	19.1717	72	15534	0.016263
Phase_2/input_48.txt	277	295	N/A	N/A	N/A	N/A	N/A	N/A	72	13734	20.7309	74	14248	0.015423
Phase_2/input_49.txt	166	181	N/A	N/A	N/A	N/A	N/A	N/A	43	8718	3.28653	43	8925	0.00622
Phase_2/input_50.txt	212	294	N/A	N/A	N/A	N/A	N/A	N/A	58	10761	10.6972	59	11139	0.010121
Phase_2/input_51.txt	266	296	N/A	N/A	N/A	N/A	N/A	N/A	72	14454	21.2771	72	14454	0.014961
Phase_2/input_52.txt	100	134	N/A	N/A	N/A	N/A	N/A	N/A	29	5053	0.688279	31	5503	0.002808
Phase_2/input_53.txt	112	220	N/A	N/A	N/A	N/A	N/A	N/A	30	5426	1.40337	30	5577	0.003542
Phase_2/input_54.txt	193	286	N/A	N/A	N/A	N/A	N/A	N/A	52	9062	7.96427	52	9153	0.00835

File														
Phase_2/input_55.txt	250	292	N/A	N/A	N/A	N/A	N/A	N/A	63	12308	15.8852	65	12728	0.012982
Phase_2/input_56.txt	254	285	N/A	N/A	N/A	N/A	N/A	N/A	58	11083	13.4853	59	11312	0.012386
Phase_2/input_57.txt	167	284	N/A	N/A	N/A	N/A	N/A	N/A	42	6691	4.43349	44	7160	0.007517
Phase_2/input_58.txt	132	230	N/A	N/A	N/A	N/A	N/A	N/A	31	4855	2.07659	32	4963	0.004743
Phase_2/input_59.txt	180	300	N/A	N/A	N/A	N/A	N/A	N/A	44	7391	5.89049	45	7634	0.007711
Phase_3/input_0.txt	500	722	N/A	N/A	N/A	N/A	N/A	N/A	108	32442	208.99	113	33414	0.037901
Phase_3/input_1.txt	510	971	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	135	33230	0.039588
Phase_3/input_2.txt	520	649	N/A	N/A	N/A	N/A	N/A	N/A	118	36635	212.479	122	39081	0.040562
Phase_3/input_3.txt	530	902	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	130	36816	0.043375
Phase_3/input_4.txt	540	851	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	134	41045	0.044964
Phase_3/input_5.txt	550	956	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	126	32629	0.043191
Phase_3/input_6.txt	560	623	N/A	N/A	N/A	N/A	N/A	N/A	135	45308	265.435	144	49876	0.048545
Phase_3/input_7.txt	570	845	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	155	44032	0.052479
Phase_3/input_8.txt	580	999	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	136	36058	0.051139
Phase_3/input_9.txt	590	839	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	130	36266	0.048394
Phase_3/input_10.txt	600	980	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	150	38285	0.052297
Phase_3/input_11.txt	610	721	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	139	40094	0.050071
Phase_3/input_12.txt	620	807	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	160	52504	0.05951
Phase_3/input_13.txt	630	854	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	157	46139	0.056799
Phase_3/input_14.txt	640	864	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	165	58013	0.066937
Phase_3/input_15.txt	650	661	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	164	51850	0.05801
Phase_3/input_16.txt	660	875	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	154	44287	0.063807
Phase_3/input_17.txt	670	964	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	166	49792	0.0672
Phase_3/input_18.txt	680	943	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	161	45139	0.067073
Phase_3/input_19.txt	690	879	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	188	58691	0.0734
Phase_3/input_20.txt	700	769	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	175	53908	0.069809
Phase_3/input_21.txt	710	995	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	178	53781	0.076515
Phase_3/input_22.txt	720	869	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	178	59030	0.078274
Phase_3/input_23.txt	730	991	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	185	55242	0.081234
Phase_3/input_24.txt	740	914	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	169	53131	0.074472
Phase_3/input_25.txt	750	790	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	185	68612	0.086037
Phase_3/input_26.txt	760	997	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	180	55554	0.085148
Phase_3/input_27.txt	770	951	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	197	58140	0.114145
Phase_3/input_28.txt	780	928	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	201	68719	0.093936
Phase_3/input_29.txt	790	967	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	189	58565	0.094513
Phase_3/input_30.txt	800	959	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	204	62302	0.105298
Phase_3/input_31.txt	810	892	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	206	72212	0.105258
Phase_3/input_32.txt	820	989	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	201	63072	0.105869
Phase_3/input_33.txt	830	834	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	208	78826	0.115572
Phase_3/input_34.txt	840	929	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	207	70134	0.113343
Phase_3/input_35.txt	850	962	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	203	68794	0.116322
Phase_3/input_36.txt	860	984	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	224	73030	0.120915
Phase_3/input_37.txt	870	906	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	214	76390	0.115952
Phase_3/input_38.txt	880	909	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	213	73077	0.111351
Phase_3/input_39.txt	890	924	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	231	78392	0.119967
Phase_3/input_40.txt	900	999	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	227	78594	0.119409
Phase_3/input_41.txt	910	914	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	210	81821	0.115624
Phase_3/input_42.txt	920	975	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	239	84569	0.134218
Phase_3/input_43.txt	930	997	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	223	75695	0.118972
Phase_3/input_44.txt	940	990	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	228	77089	0.149362

Phase_3/input_45.txt	950	977	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	255	91028	0.13249
Phase_3/input_46.txt	960	994	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	239	89458	0.134436
Phase_3/input_47.txt	970	988	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	249	100502	0.141912
Phase_3/input_48.txt	980	992	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	247	87650	0.140229
Phase_3/input_49.txt	990	1000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	263	90256	0.14731
Phase_3/input_50.txt	1000	1000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	230	81907	0.134006
Phase_3/input_51.txt	977	977	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	248	85006	0.135436
Phase_3/input_52.txt	728	913	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	176	51997	0.07533
Phase_3/input_53.txt	551	968	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	120	29474	0.046009
Phase_3/input_54.txt	613	959	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	151	42504	0.057167
Phase_3/input_55.txt	744	784	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	179	66742	0.086833
Phase_3/input_56.txt	746	950	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	196	61142	0.096928
Phase_3/input_57.txt	773	953	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	195	58395	0.094502
Phase_3/input_58.txt	664	762	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	168	55283	0.073287
Phase_3/input_59.txt	731	875	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	188	60015	0.091512