

**Name: Aditya**  
**Surname: Pandey**  
**Student Id: 1001405034**  
**Course Name: Machine Learning**  
**Course Number: 6363**

Case 1:

```
>> svd_power('input1.txt',1,10)
```

Matrix U:

Row	1:	0.5096
Row	2:	0.3423
Row	3:	0.2466
Row	4:	0.3953
Row	5:	0.1285
Row	6:	0.5451
Row	7:	0.3041

Matrix S:

Row	1:	2.9929
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Matrix V:

Row	1:	0.3411
Row	2:	0.4846
Row	3:	0.1703
Row	4:	0.3024
Row	5:	0.0429
Row	6:	0.5683
Row	7:	0.1821
Row	8:	0.1143
Row	9:	0.3966

Reconstruction ( $U \cdot S \cdot V'$ ):

Row	1:	0.5202	0.7390	0.2597	0.4612	0.0654	0.8667	0.2778	0.1743	0.6049
Row	2:	0.3495	0.4965	0.1745	0.3099	0.0439	0.5823	0.1866	0.1171	0.4064
Row	3:	0.2518	0.3577	0.1257	0.2232	0.0317	0.4195	0.1345	0.0844	0.2928
Row	4:	0.4035	0.5732	0.2015	0.3578	0.0507	0.6723	0.2155	0.1352	0.4692
Row	5:	0.1312	0.1864	0.0655	0.1163	0.0165	0.2186	0.0701	0.0440	0.1526
Row	6:	0.5565	0.7905	0.2778	0.4933	0.0700	0.9271	0.2971	0.1865	0.6470
Row	7:	0.3105	0.4410	0.1550	0.2752	0.0390	0.5172	0.1658	0.1040	0.3610

>>

Case 2:

```
>> svd_power('input1.txt',1,100)
```

Matrix U:

Row	1:	0.5098
Row	2:	0.3420
Row	3:	0.2465
Row	4:	0.3955
Row	5:	0.1282
Row	6:	0.5452
Row	7:	0.3038

Matrix S:

Row	1:	2.9929
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Matrix V:

Row	1:	0.3410
Row	2:	0.4847
Row	3:	0.1703
Row	4:	0.3025
Row	5:	0.0428
Row	6:	0.5683
Row	7:	0.1822
Row	8:	0.1143
Row	9:	0.3967

Reconstruction ( $U \cdot S \cdot V'$ ):

Row	1:	0.5202	0.7395	0.2599	0.4615	0.0654	0.8670	0.2779	0.1743	0.6052
Row	2:	0.3490	0.4960	0.1743	0.3096	0.0439	0.5816	0.1864	0.1169	0.4060
Row	3:	0.2515	0.3575	0.1256	0.2231	0.0316	0.4192	0.1344	0.0843	0.2926
Row	4:	0.4036	0.5737	0.2016	0.3581	0.0507	0.6727	0.2157	0.1353	0.4696
Row	5:	0.1309	0.1860	0.0654	0.1161	0.0164	0.2181	0.0699	0.0439	0.1522

Row	6: 0.5564	0.7908	0.2779	0.4936	0.0699	0.9273	0.2973	0.1864	0.6473
Row	7: 0.3100	0.4407	0.1549	0.2750	0.0390	0.5167	0.1656	0.1039	0.3607

>>

Case 3:

```
>> svd_power('input1.txt',2,10)
```

Matrix U:

Row	1:	0.5096	-0.3027
Row	2:	0.3423	0.5300
Row	3:	0.2466	0.2613
Row	4:	0.3953	-0.4016
Row	5:	0.1285	0.4181
Row	6:	0.5451	-0.2120
Row	7:	0.3041	0.4220

Matrix S:

Row	1:	2.9929	0.0000
Row	2:	0.0000	2.2147

Matrix V:

Row	1:	0.3411	0.7371
Row	2:	0.4846	-0.4131
Row	3:	0.1703	-0.1364
Row	4:	0.3024	-0.3175
Row	5:	0.0429	0.1888
Row	6:	0.5683	0.1983
Row	7:	0.1821	-0.0956
Row	8:	0.1143	0.2395
Row	9:	0.3966	-0.1587

Reconstruction ( $U \cdot S \cdot V'$ ):

Row 1:	0.0261	1.0160	0.3511	0.6741	-0.0612	0.7338	0.3419	0.0138	0.7113
Row 2:	1.2148	0.0115	0.0144	-0.0629	0.2656	0.8150	0.0744	0.3983	0.2201
Row 3:	0.6784	0.1186	0.0468	0.0395	0.1410	0.5343	0.0791	0.2230	0.2009
Row 4:	-0.2521	0.9407	0.3227	0.6402	-0.1172	0.4959	0.3005	-0.0778	0.6104

Row 5: 0.8137 -0.1961 -0.0608 -0.1777 0.1914 0.4022 -0.0184 0.2657 0.0056

Row 6: 0.2104 0.9844 0.3418 0.6424 -0.0187 0.8340 0.3420 0.0740 0.7216

Row 7: 0.9993 0.0549 0.0275 -0.0215 0.2155 0.7025 0.0765 0.3279 0.2127

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Case 4:

```
>> svd_power('input1.txt',4,100)
```

Matrix U:

Row	1:	0.5098	-0.3014	-0.5931	0.3567
Row	2:	0.3420	0.5308	-0.2658	-0.1579
Row	3:	0.2465	0.2610	0.5642	0.1570
Row	4:	0.3955	-0.4015	0.3596	0.3928
Row	5:	0.1282	0.4180	0.1980	0.4751
Row	6:	0.5452	-0.2116	0.2513	-0.6618
Row	7:	0.3038	0.4226	-0.1662	-0.0723

Matrix S:

Row	1:	2.9929	0.0000	0.0000	0.0000
Row	2:	0.0000	2.2147	0.0000	0.0000
Row	3:	0.0000	0.0000	1.6335	0.0000
Row	4:	0.0000	0.0000	0.0000	1.3586

Matrix V:

Row	1:	0.3410	0.7371	0.2022	0.2958
Row	2:	0.4847	-0.4129	0.0109	0.0645
Row	3:	0.1703	-0.1361	-0.3631	0.2625
Row	4:	0.3025	-0.3174	-0.1430	0.5516
Row	5:	0.0428	0.1887	0.1212	0.3497
Row	6:	0.5683	0.1988	-0.4736	-0.3941
Row	7:	0.1822	-0.0955	0.1539	-0.4871
Row	8:	0.1143	0.2397	-0.1627	-0.1162
Row	9:	0.3967	-0.1590	0.7194	-0.0825

Reconstruction ( $U \cdot S \cdot V'$ ):

Row 1:	-0.0244	1.0358	0.8297	1.0792	-0.0086	1.0022	-0.0434	0.1156	-0.0256
Row 2:	1.0642	-0.0079	0.1156	-0.1198	0.1381	1.1055	0.1118	0.4942	-0.0755

Row 3:	0.9271	0.1426	-0.2317	0.0256	0.3270	0.0135	0.1170	0.0481	0.8461
Row 4:	0.0248	0.9818	0.2495	0.8507	0.1407	0.0074	0.1310	-0.2354	0.9895
Row 5:	1.0695	-0.1511	-0.0086	0.1321	0.4561	-0.0054	-0.2832	0.1381	0.1845
Row 6:	0.0281	0.9308	-0.0434	0.0876	-0.2832	0.9940	0.8432	0.1118	1.0912
Row 7:	0.9159	0.0449	0.1002	-0.0374	0.1483	0.8700	0.0823	0.3838	0.0247

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