Lab-1 Report

Q1. a) For a=6,b=0,m=11, the values repeat after 10 iterations for all values of seed X_0

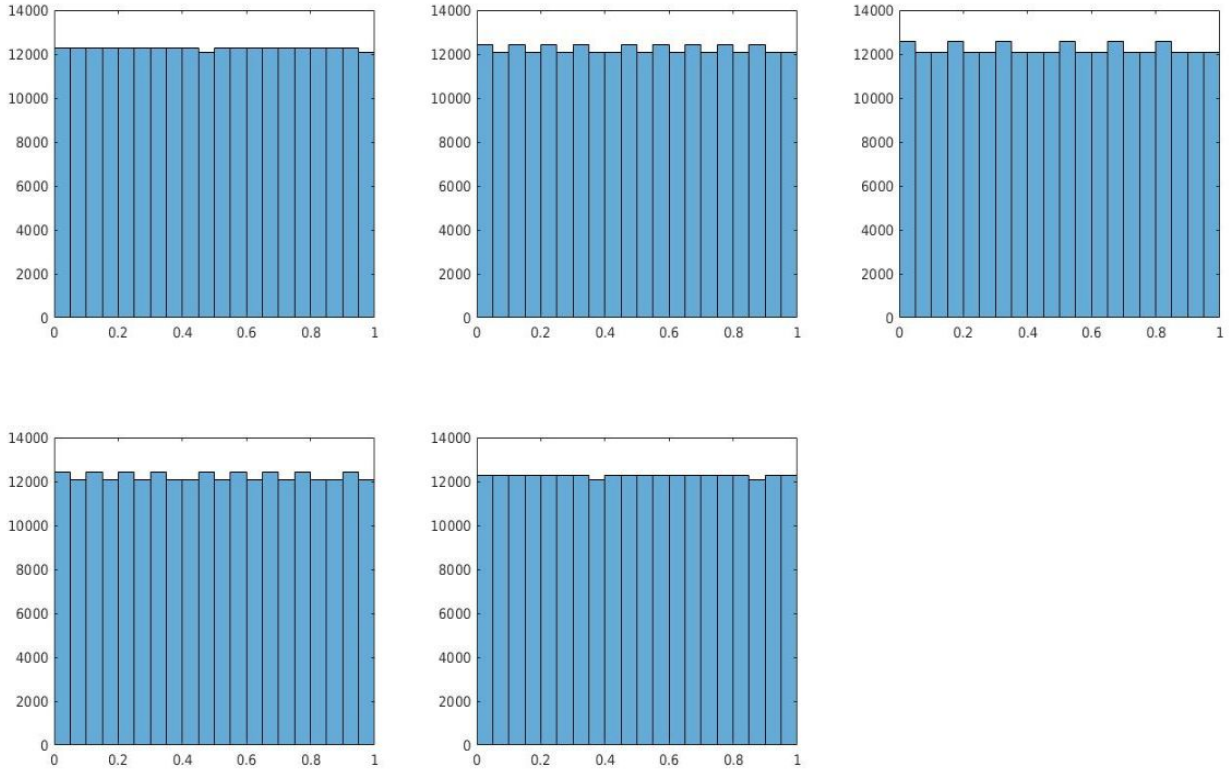
Values of X_0	0	1	2	3	4	5	6	7	8	9	10
U_0	0	0.272727272727	0.545454545455	0.818181818182	0.090909090991	0.363636363636	0.636363636364	0.909090909091	0.181818181818	0.454545454545	0.727272727273
U_1	0	0.818181818182	0.636363636364	0.454545454545	0.272727272727	0.090909090991	0.909090909091	0.727272727273	0.545454545455	0.363636363636	0.181818181818
U_2	0	0.454545454545	0.909090909091	0.363636363636	0.818181818182	0.272727272727	0.727272727273	0.181818181818	0.636363636364	0.090909090991	0.545454545455
U_3	0	0.363636363636	0.727272727273	0.090909090991	0.454545454545	0.818181818182	0.181818181818	0.545454545455	0.909090909091	0.272727272727	0.636363636364
U_4	0	0.090909090991	0.181818181818	0.272727272727	0.363636363636	0.454545454545	0.545454545455	0.636363636364	0.727272727273	0.818181818182	0.909090909091
U_5	0	0.272727272727	0.545454545455	0.818181818182	0.090909090991	0.363636363636	0.636363636364	0.909090909091	0.181818181818	0.454545454545	0.727272727273
U_6	0	0.818181818182	0.636363636364	0.454545454545	0.272727272727	0.090909090991	0.909090909091	0.727272727273	0.545454545455	0.363636363636	0.181818181818
U_7	0	0.454545454545	0.909090909091	0.363636363636	0.818181818182	0.272727272727	0.727272727273	0.181818181818	0.636363636364	0.090909090991	0.545454545455
U_8	0	0.363636363636	0.727272727273	0.090909090991	0.454545454545	0.818181818182	0.181818181818	0.545454545455	0.909090909091	0.272727272727	0.636363636364
U_9	0	0.090909090991	0.181818181818	0.272727272727	0.363636363636	0.454545454545	0.545454545455	0.636363636364	0.727272727273	0.818181818182	0.909090909091
U_{10}	0	0.272727272727	0.545454545455	0.818181818182	0.090909090991	0.363636363636	0.636363636364	0.909090909091	0.181818181818	0.454545454545	0.727272727273

Q1. b) For a=3,b=0,m=11, the values repeat after 10 iterations for all values of seed X_0

Values of X_0	0	1	2	3	4	5	6	7	8	9	10
U_0	0	0.545454545	0.090909090	0.636363636	0.181818181	0.727272727	0.272727272	0.818181818	0.363636363	0.909090909	0.454545454
U_1	0	0.272727272	0.545454545	0.818181818	0.090909090	0.363636363	0.636363636	0.909090909	0.181818181	0.454545454	0.727272727
U_2	0	0.636363636	0.272727272	0.909090909	0.545454545	0.181818181	0.818181818	0.454545454	0.090909090	0.727272727	0.363636363
U_3	0	0.818181818	0.636363636	0.454545454	0.272727272	0.090909090	0.909090909	0.727272727	0.545454545	0.363636363	0.181818181
U_4	0	0.909090909	0.818181818	0.727272727	0.636363636	0.545454545	0.454545454	0.363636363	0.272727272	0.181818181	0.090909090
U_5	0	0.454545454	0.909090909	0.363636363	0.818181818	0.272727272	0.727272727	0.181818181	0.636363636	0.090909090	0.545454545
U_6	0	0.727272727	0.454545454	0.181818181	0.909090909	0.636363636	0.363636363	0.090909090	0.818181818	0.545454545	0.272727272
U_7	0	0.363636363	0.727272727	0.090909090	0.454545454	0.818181818	0.181818181	0.545454545	0.909090909	0.272727272	0.636363636
U_8	0	0.181818181	0.363636363	0.545454545	0.727272727	0.909090909	0.090909090	0.272727272	0.454545454	0.636363636	0.818181818
U_9	0	0.090909090	0.181818181	0.272727272	0.363636363	0.454545454	0.545454545	0.636363636	0.727272727	0.818181818	0.909090909
U_{10}	0	0.545454545	0.090909090	0.636363636	0.181818181	0.727272727	0.272727272	0.818181818	0.363636363	0.909090909	0.454545454

Q.2 a) For a=1597,b=0,m=244944 the frequency distribution is

Values of X_0	10	100	1000	10000	100000
0.0-0.05	12264	12432	12600	12432	12264
0.05-0.10	12264	12096	12096	12096	12264
0.10-0.15	12264	12432	12096	12432	12264
0.15-0.20	12264	12096	12600	12096	12264
0.20-0.25	12264	12432	12096	12432	12264
0.25-0.30	12264	12096	12096	12096	12264
0.30-0.35	12264	12432	12600	12432	12264
0.35-0.40	12264	12096	12096	12096	12096
0.40-0.45	12264	12096	12096	12096	12264
0.45-0.50	12096	12432	12096	12432	12264
0.50-0.55	12264	12096	12600	12096	12264
0.55-0.60	12264	12432	12096	12432	12264
0.60-0.65	12264	12096	12096	12096	12264
0.65-0.70	12264	12432	12600	12432	12264
0.70-0.75	12264	12096	12096	12096	12264
0.75-0.80	12264	12432	12096	12432	12264
0.80-0.85	12264	12096	12600	12096	12264
0.85-0.90	12264	12432	12096	12096	12096
0.90-0.95	12264	12096	12096	12432	12264
0.95-1.00	12096	12096	12096	12096	12264



Q3. For a=1229,b=1,m=8, the plot u_i versus u_{i-1}