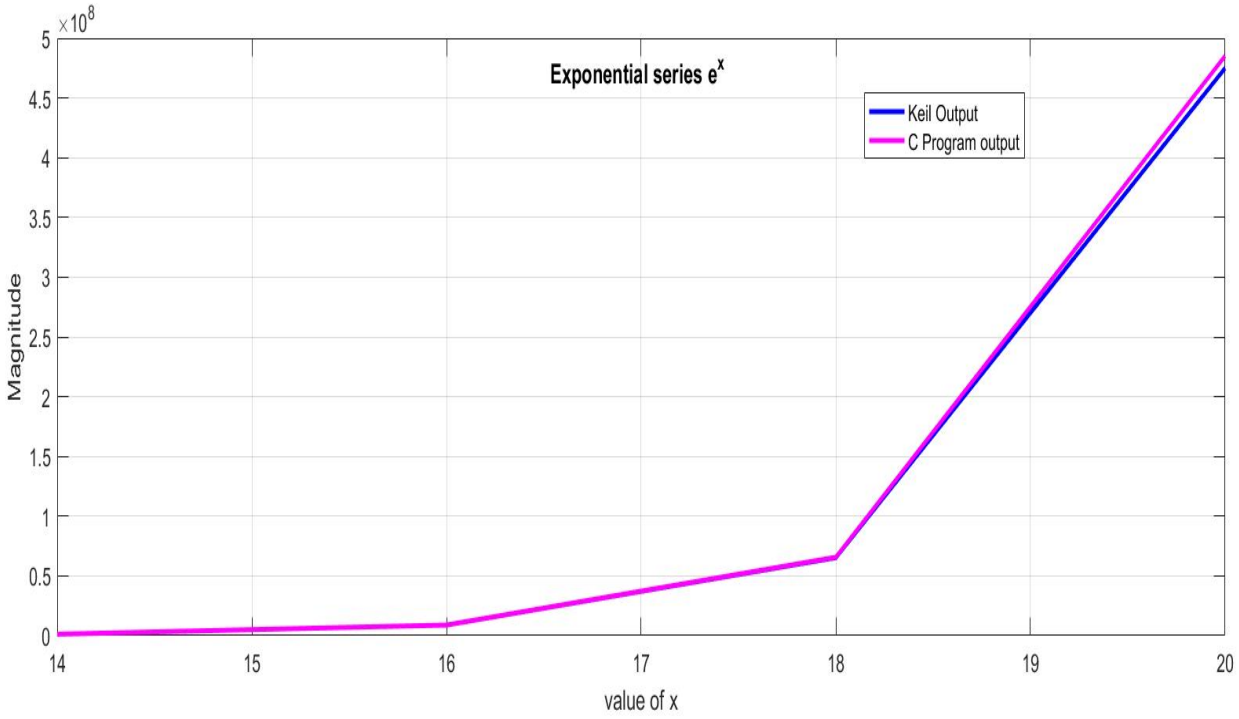
Q1)

$$e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!} = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots$$

input x	Value obtained from ARM assembly	Value obtained from C program	actual value	No. of iterations
1	2.71828	2.718	2.71828	20
2	7.38906	7.388713	7.3891	20
3	20.0855	20.066393	20.0855	20
4	54.5979	54.598148	54.5982	20
5	148.403	148.4131	148.4132	20
6	403.428	403.428	403.4288	20
7	1096.62	1096.6331	1096.6332	20
8	2980.68	2980.958	2980.958	20
9	8099.52	8103.0839	8103.0839	20
10	2.20E+04	22026.464844	22026.4658	20
12	1.63E+05	162754.796875	162754.7914	30
14	1.20E+06	1202604.25	1202604.284	30
16	8.88E+06	8886111	8886110.521	30
18	6.53E+07	65659968	65659969.14	30
20	4.75E+08	485165184	485165195.4	30
25	#INF	72004902912	72004899337	30

Comparison of Keil output vs Actual output

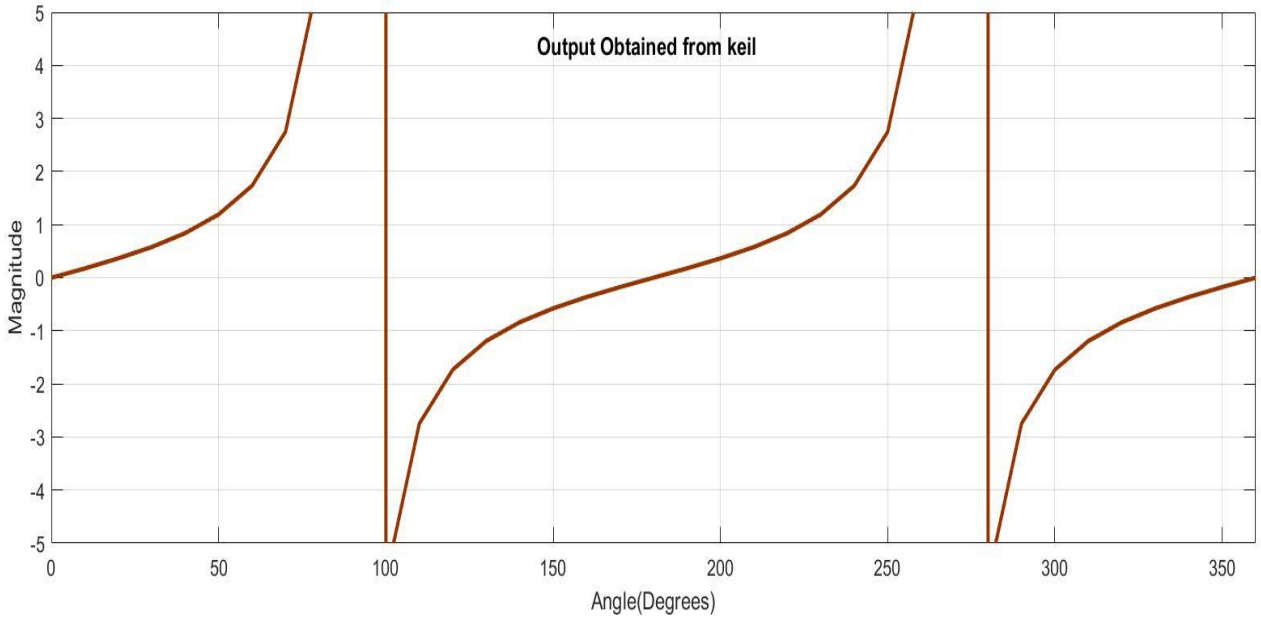


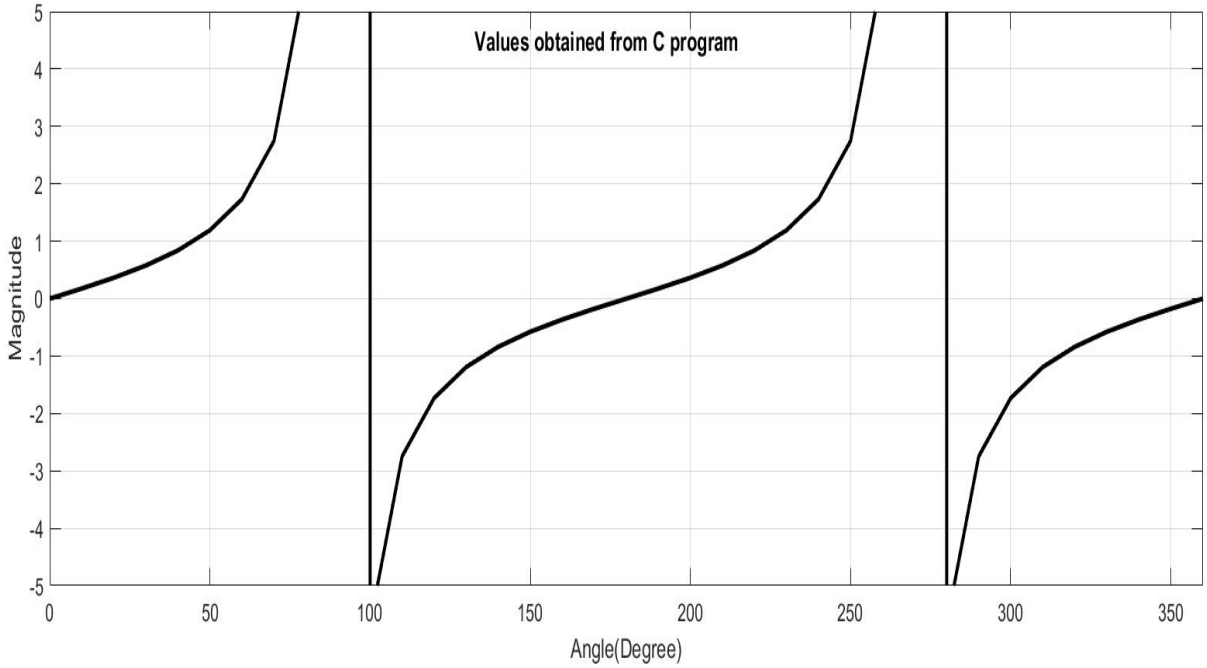
Q2) Tan(x)= Sin(x)/ Cos(x)

$$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \cdots = \sum_{k=0}^{n} \frac{(-1)^k x^{2k}}{(2k)!}$$

$$\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \cdots = \sum_{k=0}^{n} \frac{(-1)^k x^{2k+1}}{(2k+1)!}$$

radians	degrees	Result from keil	Result from C program	Error
0	0	0	0	0
0.174532	10	0.1745329	0.176326	0.0017931
0.349064	20	0.363968	0.363968	0
0.523596	30	0.577347	0.577347	0
0.698128	40	0.839093	0.839093	0
0.872660	50	1.19174	1.191742	2.00E-06
1.047192	60	1.73202	1.732029	9.00E-06
1.221724	70	2.74742	2.747422	2.00E-06
1.396256	80	5.67084	5.671036	0.000196
1.570788	90	120341	120094.2266	-246.77
1.745320	100	-5.67159	-5.671589	1.00E-06
1.919852	110	-2.74756	-2.747564	-4.00E-06
2.094384	120	-1.7321	-1.732095	5.00E-06
2.268916	130	-1.19178	-1.191783	-3.00E-06
2.443448	140	-0.839122	-0.839122	0
2.617980	150	-0.57737	-0.577369	1.00E-06
2.792512	160	-0.36399	-0.363987	3.00E-06
2.967044	170	-0.17634	-0.176343	-3.00E-06
3.141576	180	-1.67E-05	-0.000017	-3.00E-07
3.316108	190	0.176308	0.176309	1.00E-06
3.490640	200	0.363949	0.363949	0
3.665172	210	0.577324	0.577324	0
3.839704	220	0.839064	0.839065	1.00E-06
4.014236	230	1.1917	1.191702	2.00E-06
4.188768	240	1.73196	1.731962	2.00E-06
4.363300	250	2.74727	2.74728	1.00E-05
4.537832	260	5.67048	5.670484	4.00E-06
4.712364	270	39977.3	40031.41016	54.11
4.886896	280	-5.67213	-5.672141	-1.10E-05
5.061428	290	-2.74772	-2.747707	1.30E-05
5.235960	300	-1.73219	-1.732162	2.80E-05
5.410492	310	-1.19187	-1.191823	4.70E-05
5.585024	320	-0.83924	-0.83915	9.00E-05
5.759556	330	-0.57756	-0.577391	0.000169
5.934088	340	-0.36431	-0.364006	0.000304
6.108620	350	-0.17693	-0.17636	0.00057
6.283152	360	-0.00108	-0.000033	0.001047


Output Obtained from keil
Magnitude
Angle(Degrees)
5
4
3
2
1
0
-1
-2
-3
-4
-5
0
50
100
150
200
250
300
350


Values obtained from C program
Magnitude
Angle(Degree)
5
4
3
2
1
0
-1
-2
-3
-4
-5
0
50
100
150
200
250
300
350