Experiment No:11   Date: 29/10/2024

Generation of Sine Wave using DSP Kit

Aim:

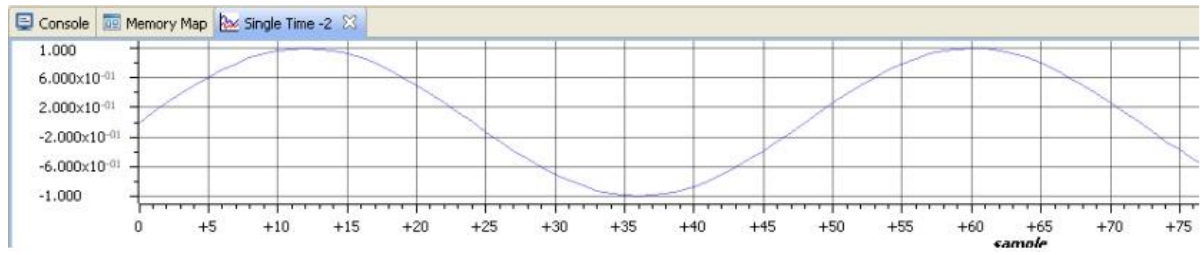To generate a sine wave using DSP Kit

Theory

Sinusoidal signals are characterized by their smooth and continuous waveforms, with no abrupt changes in amplitude. The amplitude of a sinusoidal signal varies gradually over time. It begins at 0 at 0° and increases steadily until it reaches a maximum value of 1 at 90°. From there, the amplitude decreases, reaching a minimum of -1 at 270°, and then returns to 0 at 360°. After 360°, the signal repeats itself, indicating that the period of the sinusoidal wave is 2π, or 360°. This periodic nature of the signal means that the waveform repeats its values at regular intervals. By observing the graph of a sinusoidal signal, it becomes clear that the amplitude fluctuates smoothly between 1 and -1, and the wave repeats itself after every 2π radians. This periodicity is an essential feature of sinusoidal signals, which are fundamental in many applications, particularly in signal processing and communication systems.

Procedure

1. Open Code Composer Studio, Click on File - New – CCS Project
Select the Target – C674X Floating point DSP , TMS320C6748 , and
Connection – Texas Instruments XDS 100v2 USB Debug Probe and Verify.
Give the project name and select Finish.

2. Type the code program for generating the sine wave and choose
File – Save As and then save the program with a name including 'main.c'.
Delete the already existing main.c program.

3. Select Debug and once finished, select the Run option.

4. From the Tools Bar, select Graphs – Single Time.
Select the DSP Data Type as 32-bit Floating point and time display unit as second(s).
Change the Start address with the array name used in the program(here,s).

5. Click OK to apply the settings and Run the program or clock Resume in CCS.

OBSERVATION

OUTPUT

Program

Sine wave

```c
#include<stdio.h>
#include<math.h>
#define pi 3.14159
float s[100];
void main()
{
int i;
float f=100, Fs=10000;
for(i=0;i<100;i++)
s[i]=sin(2*pi*f*i/Fs);
}
```

Result

Generated sine wave using DSP Kit.