Experiment Number	**07**
Date of Experiment	06/11/2023
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Section	ECS-01

Aim of The Experiment :-

Realization of FIR/IIR filters in DSK-TMSC6713 processor Kit in real time.

Equipment and Software Required:-

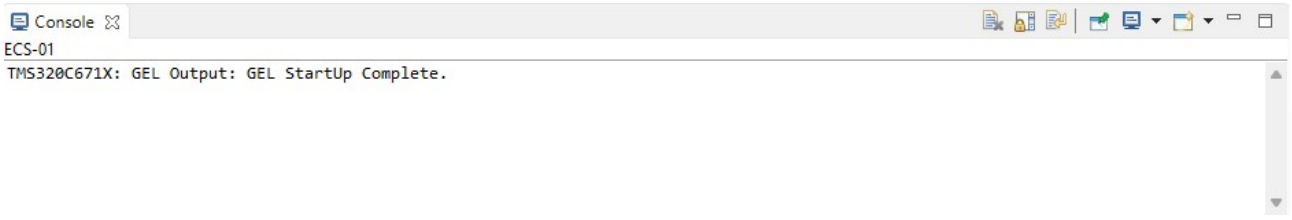
The Equipment and Software required are as follows:

- DSP processor kit (DSK-TMSC6713 processor kit)
- Code Composer Studio (CCS v-5)

Code:

```
/* Harshit, Prabuddha, Manodeep(2230028), Somo*/
 #include "DSK6713_AIC23.h"                          // codec support
 Uint32 fs=DSK6713_AIC23_FREQ_8KHZ;                  //set sampling rate

 #define DSK6713_AIC23_INPUT_MIC 0X0015
 #define DSK6713_AIC23_INPUT_LINE 0x0011

 Uint16 7inputsource-DSK6713_AIC23_INPUT_LINE;  // select line in

 #include "ave5f.cof"                                //filter coefficient file
 float x[N];                                                 //filter delay line
 interrupt void c_int11()                                    //ISR
AIC23 codec interrupts at 8kHz
{
        short i;
        float yn 0.0;
        x[01 = (float)(input_left sample());      //get new input into delay line

        for (i=0; i<N; i++)                          //calculate filter output
                yn+h[i]x[i];
        for (i=(N-1); i>0; i--)                      //shuffle delay line contents
                x[i] = x[i-1];
        output left sample((short)(yn));    //output to codec

        return;
}
 void main()                                         //main body of program does nothing
 {
        comm intr();                                //initialise DSK
        while(1);                                   //infinite loop
}
```

Console:



Discussion or Inference of the experiment:

In this experiment , we used a DSP processor kit (DSK-TMSC6713 processor kit) for implementing FIR/IIR filters in real time , measure system's responsiveness by examining the latency between input and output signals Our analysis was centered on the DSK-TMSC6713's computational efficiency when running FIR/IIR.We used an audio file from the system and used FIR /IIR filters on it and also used audio output device to analyse the output signal.We scripted the code in C programming Language.

Conslusion:

This experiment taught us how to use setup a DSP processor kit (DSK-TMSC6713) , connect the kit to the computer and run code on the hardware using CCS , execute FIR/IIR filters in real-time using the DSK TMSC6713 processor kit , use external files(here audio) n the DSP processor kit and operate on them. We learnt about the nature and function of the FIR/IIR filters and their effeciency , and problems regarding them on a DSP processor.