CPE 3500

Embedded Digital Signal Processing

Lab 6: Audio Record-Playback using PingPong Buffer

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- Task-1:

```
/* USER CODE END MX_GPIO_Init_2 */
}

/* USER CODE BEGIN 4 */
void HAL_GPIO_EXTI_Callback(uint16_t GPIO_Pin)
{
    HAL_ADC_Start_DMA(&hadc1, adc_buffer, BUFFER_SIZE);
}

void HAL_ADC_ConvHalfCpltCallback(ADC_HandleTypeDef *hadc)
{
    for (int n = 0; n < BUFFER_HALFSIZE; n++)
    {
        dac_buffer[n] = adc_buffer[n];
    }
}

void HAL_ADC_ConvCpltCallback(ADC_HandleTypeDef *hadc)
{
    HAL_ADC_Stop_DMA(&hadc1);
    for (int n = BUFFER_HALFSIZE; n < BUFFER_SIZE; n++)
    {
        dac_buffer[n] = adc_buffer[n];
    }
    HAL_DAC_Start_DMA(&hdac1, DAC_CHANNEL_1, dac_buffer, BUFFER_SIZE, DAC_ALIGN_12B_R);
}

void HAL_DAC_ConvHalfCpltCallbackCh1(DAC_HandleTypeDef *hdac)
{
    // Handle DAC half transfer complete event
}

void HAL_DAC_ConvCpltCallbackCh1(DAC_HandleTypeDef *hdac)
{
    HAL_DAC_Stop_DMA(&hdac1, DAC_CHANNEL_1);
}

/* USER CODE END 4 */
```

- Task-2:

--Struggling with Audio so there is no math lab file unfortunately.

- Task-3:

```
/* USER CODE BEGIN 4 */
void HAL_GPIO_EXTI_Callback(uint16_t GPIO_Pin)
{

HAL_ADC_Start_DMA(&hadc1, adc_buffer, BUFFER_SIZE);
}
void HAL_ADC_ConvHalfCpltCallback(ADC_HandleTypeDef *hadc)
{
    for (int n=0; n<BUFFER_HALFSIZE; n++)
    {
        dac_buffer[BUFFER_HALFSIZE - 1 - n] = adc_buffer[n];    }
}

void HAL_ADC_ConvCpltCallback(ADC_HandleTypeDef *hadc)
{
    HAL_ADC_Stop_DMA(&hadc1);
    for (int n=BUFFER_HALFSIZE; n<BUFFER_SIZE; n++)
        {
        dac_buffer[BUFFER_SIZE - 1 - (n - BUFFER_HALFSIZE)] = adc_buffer[n];
        }
    HAL_DAC_Start_DMA(&hdac1, DAC_CHANNEL_1, dac_buffer, BUFFER_SIZE,DAC_ALIGN_12B_R);
}
void HAL_DAC_ConvHalfCpltCallbackCh1(DAC_HandleTypeDef *hdac)
{

}
void HAL_DAC_ConvCpltCallbackCh1(DAC_HandleTypeDef *hdac)
{
    HAL_DAC_Stop_DMA(&hdac1, DAC_CHANNEL_1);
}

/* USER CODE END 4 */
```

- Conclusion (1-paragraph)

So overall I haven't figured out the bug in my code or .ioc file. It has been allowing to build then debug seamlessly. However, there is ZERO audio coming back after clicking the button to start the recording process. I've been working on it for a while and I haven't gotten it work at all yet. I'll continue working on it over the weekend but mostly like it may be an issue in the configuration that I keep missing somewhere.