

# EECS 363 : Digital Filtering

## Lab 1

1/11/2017

Karan Shah

Processing and size :

Workspace - CCS Debug - karan\_lab1/volume.c - Code Composer Studio

File Edit View Project Tools Run Scripts Window Help

Debug

karan\_lab1 [Code Composer Studio - Device Debugging]

- ↳ Texas Instruments XDS100v2 USB Debug Probe/CS5xx (Suspended)
- ↳ processing(int \*, int \*) at volume.c:86 0x003680
- ↳ main() at volume.c:55 0x003675
- ↳ \_args\_main() at args\_main.c:72 0x0038AB (\_args\_main does not contain frame information)

Name	Type	Value	Location
input	int *	0x000051EA (20964)	0x000272@DATA
output	int *	0x0000524E (20964)	0x000274@DATA
size	int	99	0x000276@DATA

```
76 *
77 * PARAMETERS: address of input and output buffers.
78 *
79 * RETURN VALUE: TRUE.
80 */
81 static int processing(int *input, int *output)
82 {
83     int size = BUFSIZE;
84     while(size--){
85         *output++ = *input++ * gain;
86     }
87     /* additional processing load */
88     load(processingLoad);
89     return(TRUE);
90 }
91
92
93
94
95 /*
96 * ===== dataIO =====
```

Console

karan\_lab1:IO

volume example started

begin processing

begin processing

Problems

0 items

Description	Resource	Path	Location	Type
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6:03 PM 1/9/2017

Workspace - CCS Debug - karan\_jab1/volume.c - Code Composer Studio

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Debug

karan\_jab1 [Code Composer Studio - Device Debugging]

- Texas Instruments XDS100v2 USB Debug Probe/CS50x (Suspended)
  - processing(int \*, int \*) at volume.c:86 0x00368D
    - main() at volume.c:55 0x003675
    - \_args\_main() at args\_main.c:72 0x0038AB (\_args\_main does not contain frame information)

Name	Type	Value	Location
input	int *	0x000051EB (3419)	0x000272@DATA
output	int *	0x0000524F (3419)	0x000274@DATA
size	int	98	0x000276@DATA

```

76 *
77 * PARAMETERS: address of input and output buffers.
78 *
79 * RETURN VALUE: TRUE.
80 */
81 static int processing(int *input, int *output)
82 {
83     int size = BUFSIZE;
84     while(size--){
85         *output++ = *input++ * gain;
86     }
87     /* additional processing load */
88     load(processingLoad);
89     return(TRUE);
90 }
91
92
93
94
95 /*
96 * ===== dataIO =====

```

Console

karan\_jab1:IO

volume example started

begin processing

begin processing

Problems

0 items

Description	Resource	Path	Location	Type
-------------	----------	------	----------	------

Workspace - CCS Debug - karan\_jab1/volume.c - Code Composer Studio

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Debug

karan\_jab1 [Code Composer Studio - Device Debugging]

- Texas Instruments XDS100v2 USB Debug Probe/CS50x (Suspended)
  - processing(int \*, int \*) at volume.c:86 0x00368D
    - main() at volume.c:55 0x003675
    - \_args\_main() at args\_main.c:72 0x0038AB (\_args\_main does not contain frame information)

Name	Type	Value	Location
input	int *	0x000051EC (16442)	0x000272@DATA
output	int *	0x00005250 (16442)	0x000274@DATA
size	int	97	0x000276@DATA

```

76 *
77 * PARAMETERS: address of input and output buffers.
78 *
79 * RETURN VALUE: TRUE.
80 */
81 static int processing(int *input, int *output)
82 {
83     int size = BUFSIZE;
84     while(size--){
85         *output++ = *input++ * gain;
86     }
87     /* additional processing load */
88     load(processingLoad);
89     return(TRUE);
90 }
91
92
93
94
95 /*
96 * ===== dataIO =====

```

Console

karan\_jab1:IO

volume example started

begin processing

begin processing

Problems

0 items

Description	Resource	Path	Location	Type
-------------	----------	------	----------	------

Workspace - CCS Debug - karan\_jab1/volume.c - Code Composer Studio

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Debug

karan\_jab1 [Code Composer Studio - Device Debugging]

- ↳ Texas Instruments XDS100v2 USB Debug Probe/CS50x (Suspended)
- ↳ processing(int \*, int \*) at volume.c:86 0x00368D
- ↳ main() at volume.c:55 0x003675
- ↳ \_args\_main() at args\_main.c:72 0x0038AB (\_args\_main does not contain frame information)

Name	Type	Value	Location
input	int *	0x000051ED (-294...	0x000272@DATA
output	int *	0x00005251 (-2947...	0x000274@DATA
size	int	96	0x000276@DATA

volume.c :: load.asm

```
76 *
77 * PARAMETERS: address of input and output buffers.
78 *
79 * RETURN VALUE: TRUE.
80 */
81 static int processing(int *input, int *output)
82 {
83     int size = BUFSIZE;
84     while(size--){
85         *output++ = *input++ * gain;
86     }
87     /* additional processing load */
88     load(processingLoad);
89     return(TRUE);
90 }
91
92
93
94
95
96 * ===== dataIO =====
```

Console

karan\_jab1:IO

volume example started

begin processing

begin processing

Problems

0 items

Description	Resource	Path	Location	Type
-------------	----------	------	----------	------

Workspace - CCS Debug - karan\_jab1/volume.c - Code Composer Studio

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Debug

karan\_jab1 [Code Composer Studio - Device Debugging]

- ↳ Texas Instruments XDS100v2 USB Debug Probe/CS50x (Suspended)
- ↳ processing(int \*, int \*) at volume.c:86 0x00368D
- ↳ main() at volume.c:55 0x003675
- ↳ \_args\_main() at args\_main.c:72 0x0038AB (\_args\_main does not contain frame information)

Name	Type	Value	Location
input	int *	0x000051EE (128)	0x000272@DATA
output	int *	0x00005252 (128)	0x000274@DATA
size	int	95	0x000276@DATA

volume.c :: load.asm

```
74 *
75 * FUNCTION: apply signal processing transform to input signal.
76 *
77 * PARAMETERS: address of input and output buffers.
78 *
79 * RETURN VALUE: TRUE.
80 */
81 static int processing(int *input, int *output)
82 {
83     int size = BUFSIZE;
84     while(size--){
85         *output++ = *input++ * gain;
86     }
87     /* additional processing load */
88     load(processingLoad);
89     return(TRUE);
90 }
91
92
93
94
```

Console

karan\_jab1:IO

volume example started

begin processing

begin processing

Problems

0 items

Description	Resource	Path	Location	Type
-------------	----------	------	----------	------

Writable Smart Insert 86:1

Workspace - CCS Debug - karan\_jab1/volume.c - Code Composer Studio

File Edit View Project Tools Run Scripts Window Help

Debug

▼ karan\_jab1 [Code Composer Studio - Device Debugging]

- ▼ Texas Instruments XDS100v2 USB Debug Probe/CS50x (Suspended)
  - processing(int \*, int \*) at volume.c:86 0x00368D
  - main() at volume.c:55 0x003675
  - \_args\_main() at args\_main.c:72 0x0038AB (\_args\_main does not contain frame information)

Name	Type	Value	Location
input	int *	0x000051F1 (2087)	0x000272@DATA
output	int *	0x00005255 (2087)	0x000274@DATA
size	int	92	0x000276@DATA

volume.c | loadasm

```
74 *  
75 * FUNCTION: apply signal processing transform to input signal.  
76 *  
77 * PARAMETERS: address of input and output buffers.  
78 *  
79 * RETURN VALUE: TRUE.  
80 */  
81 static int processing(int *input, int *output)  
82 {  
83     int size = BUFSIZE;  
84     while(size--){  
85         *output++ = *input++ * gain;  
86     }  
87     /* additional processing load */  
88     load(processingLoad);  
89     return(TRUE);  
90 }  
91  
92  
93  
94
```

Console

karan\_jab1:IO

volume example started

begin processing

begin processing

Problems

0 items

Description	Resource	Path	Location	Type
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Writable Smart Insert 86:1

Workspace - CCS Debug - karan\_jab1/volume.c - Code Composer Studio

File Edit View Project Tools Run Scripts Window Help

Debug

▼ karan\_jab1 [Code Composer Studio - Device Debugging]

- ▼ Texas Instruments XDS100v2 USB Debug Probe/CS50x (Suspended)
  - processing(int \*, int \*) at volume.c:86 0x00368D
  - main() at volume.c:55 0x003675
  - \_args\_main() at args\_main.c:72 0x0038AB (\_args\_main does not contain frame information)

Name	Type	Value	Location
input	int *	0x000051FD (15325)	0x000272@DATA
output	int *	0x00005261 (15325)	0x000274@DATA
size	int	80	0x000276@DATA

volume.c | loadasm

```
76 *  
77 * FUNCTION: apply signal processing transform to input signal.  
78 *  
79 * PARAMETERS: address of input and output buffers.  
80 *  
81 * RETURN VALUE: TRUE.  
82 */  
83 static int processing(int *input, int *output)  
84 {  
85     int size = BUFSIZE;  
86     while(size--){  
87         *output++ = *input++ * gain;  
88     }  
89     /* additional processing load */  
90     load(processingLoad);  
91     return(TRUE);  
92 }  
93  
94  
95
```

Console

karan\_jab1:IO

volume example started

begin processing

begin processing

Problems

0 items

Description	Resource	Path	Location	Type
-------------	----------	------	----------	------

Writable Smart Insert 86:1

Workspace - CCS Debug - karan\_lab1/volume.c - Code Composer Studio

File Edit View Project Tools Run Scripts Window Help

Debug

▼ karan\_lab1 [Code Composer Studio - Device Debugging]

- ▼ Texas Instruments XDS100v2 USB Debug Probe/CS50x (Suspended)
  - processing(int \*, int \*) at volume.c:87 0x0036A8
  - main() at volume.c:55 0x003675
  - \_args\_main() at args\_main.c:72 0x0038AB (\_args\_main does not contain frame information)

Name	Type	Value	Location
input	int *	0x00005213 (14062)	0x000272@DATA
output	int *	0x00005277 (14062)	0x000274@DATA
size	int	59	0x000276@DATA

volume.c:87 loadasm

```
/* FUNCTION: apply signal processing transform to input signal.
 *
 * PARAMETERS: address of input and output buffers.
 *
 * RETURN VALUE: TRUE.
 */
static int processing(int *input, int *output)
{
    int size = BUFSIZE;
    while(size--){
        *output++ = *input++ * gain;
    }
    /* additional processing load */
    load(processingLoad);
    return(TRUE);
}
```

Console

karan\_lab1:IO

volume example started

begin processing

begin processing

Problems

0 items

Description	Resource	Path	Location	Type
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Writable Smart Insert 87:1

Workspace - CCS Debug - karan\_lab1/volume.c - Code Composer Studio

File Edit View Project Tools Run Scripts Window Help

Debug

▼ karan\_lab1 [Code Composer Studio - Device Debugging]

- ▼ Texas Instruments XDS100v2 USB Debug Probe/CS50x (Suspended)
  - processing(int \*, int \*) at volume.c:86 0x00368D
  - main() at volume.c:55 0x003675
  - \_args\_main() at args\_main.c:72 0x0038AB (\_args\_main does not contain frame information)

Name	Type	Value	Location
input	int *	0x00005247 (7831)	0x000272@DATA
output	int *	0x000052AB (7831)	0x000274@DATA
size	int	6	0x000276@DATA

volume.c:86 loadasm

```
/* FUNCTION: apply signal processing transform to input signal.
 *
 * PARAMETERS: address of input and output buffers.
 *
 * RETURN VALUE: TRUE.
 */
static int processing(int *input, int *output)
{
    int size = BUFSIZE;
    while(size--){
        *output++ = *input++ * gain;
    }
    /* additional processing load */
    load(processingLoad);
    return(TRUE);
}
```

Console

karan\_lab1:IO

volume example started

begin processing

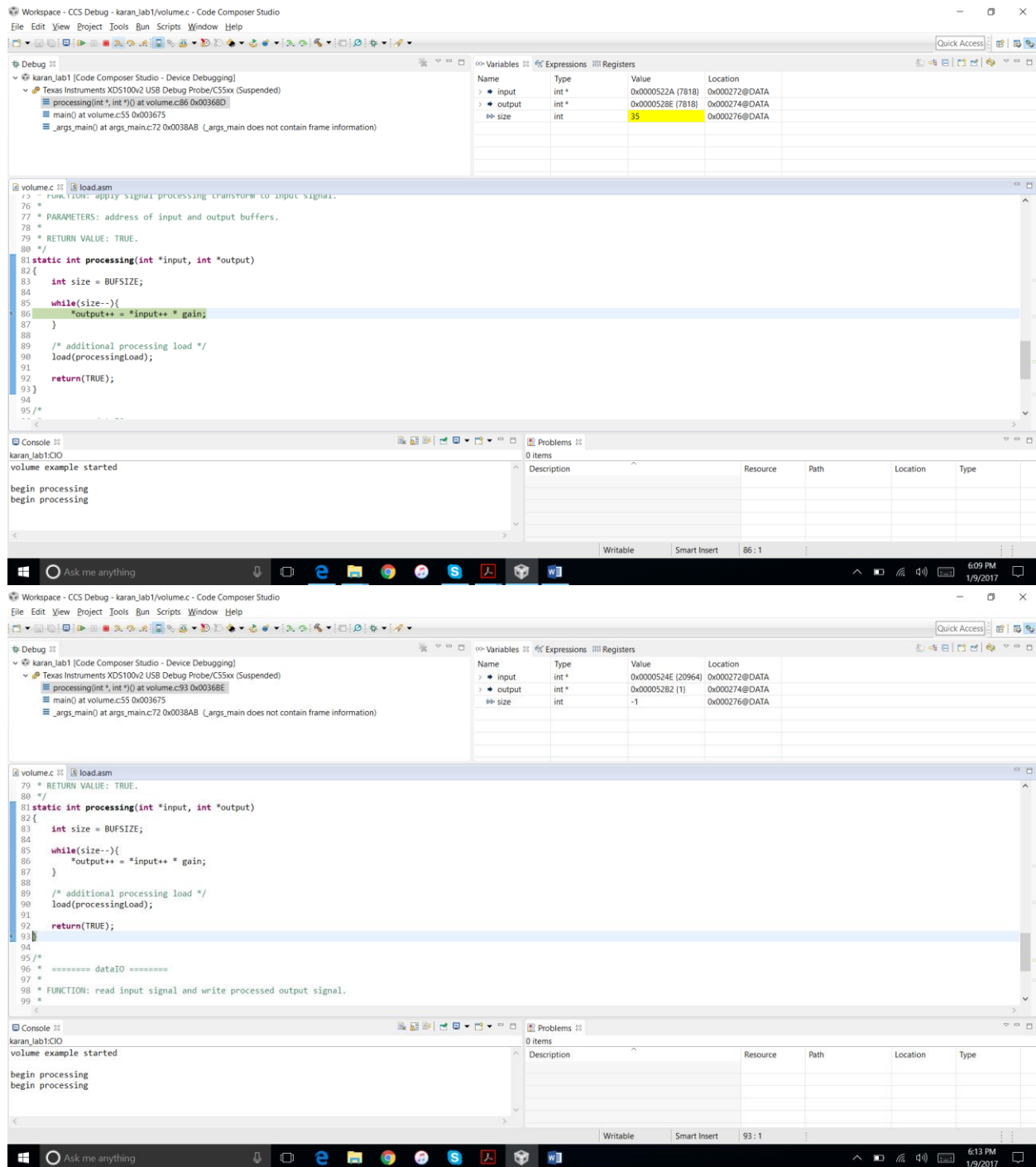
begin processing

Problems

0 items

Description	Resource	Path	Location	Type
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Writable Smart Insert 86:1



When a step-in operation is performed in the while loop, the size of the buffer decreases and the value of input variable and output variable changes because during each iteration the value of input variable is increased by one and that should be equal to the value of output variable.

Output 2 :

