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(gdb) list
1      /// CSE 2312 Computer Org and Assembly Language Programming
2      /// // strings concatenate
3      /// // T Rosenkrantz
4
5      /// #include <stdlib.h>    // EXIT_ macro
6      /// #include <stdio.h>    // printf
7      /// #include <inttypes.h>  // PRI macro
8      /// #include <stdint.h>   // C99 uintX_t and intX_t types
9
10     /// extern void strCat(const char first[], const char last[]);
(gdb)
11
12     /// int main(void)
13     /// {
14         /// char last[] = "Bharmal";
15         /// //char str[] = "Hello World!";
16         /// char first[30] = "Hasnain ";    // with a 'space' at the end
17         /// strCat(first, last);
18         /// printf("Full Name = %s\n", first);
19         /// return EXIT_SUCCESS;
20     /// }
(gdb) b 10
Breakpoint 1 at 0x104a8: file hi.c, line 14.
(gdb) step
The program is not being run.
(gdb) run
Starting program: /home/hasnain/Desktop/CSE_Quiz/strcat
s

Breakpoint 1, main () at hi.c:14
14         /// char last[] = "Bharmal";
(gdb) s
16         /// char first[30] = "Hasnain ";    // with a 'space' at the end
(gdb) s
17         /// strCat(first, last);
(gdb) s
strCat () at strcat.s:5
5         /// LDRSB R2, [R0], #1 // get character from strTo
(gdb) list
1         /// .global strCat
2         /// .text
3
4         /// strCat:

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4      strcat:
5          LDRSB R2, [R0], #1 // get character from strTo
6          CMP R2, #0         // is char = null?
7          BNE strCat         // no, get next character
8          SUB R0, R0, #1     // back up to null
9      strCat_loop:
10         LDRSB R2, [R1], #1 // get character from strFrom
(gdb)
11         CMP R2, #0         // is character a null?
12         BEQ strCat_end     // yes, exit
13         STRB R2, [R0], #1  // store character in strTo
14         B strCat_loop      // get next character
15     strCat_end:
16         MOV R2, #0         // add null terminator to strTo
17         STRB R2, [R0]
18         BX LR
19
20
(gdb) b 18
Breakpoint 2 at 0x10498: file strcat.s, line 18.
(gdb) x/64cb $r0
0x7effff218: 72 'H' 97 'a' 115 's' 110 'n' 97 'a' 105 'i' 110 'n' 32 ' '
0x7effff220: 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000'
0x7effff228: 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000'
0x7effff230: 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000'
0x7effff238: 66 'B' 104 'h' 97 'a' 114 'r' 109 'm' 97 'a' 108 'l' 0 '\000'
0x7effff240: 0 '\000' 0 '\000' 0 '\000' 0 '\000' 24 '\030' -41 '\327' -34 '\336' 118 'v'
0x7effff248: 0 '\000' -16 '\360' -15 '\361' 118 'v' -108 '\224' -13 '\363' -1 '\377' 126 '-'
0x7effff250: 1 '\001' 0 '\000' 0 '\000' 0 '\000' -100 '\234' 4 '\004' 1 '\001' 0 '\000'
(gdb) c
Continuing.

Breakpoint 2, strCat_end () at strcat.s:18
18      BX LR
(gdb) x/64cb 0x7effff218
0x7effff218: 72 'H' 97 'a' 115 's' 110 'n' 97 'a' 105 'i' 110 'n' 32 ' '
0x7effff220: 66 'B' 104 'h' 97 'a' 114 'r' 109 'm' 97 'a' 108 'l' 0 '\000'
0x7effff228: 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000'
0x7effff230: 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000'
0x7effff238: 66 'B' 104 'h' 97 'a' 114 'r' 109 'm' 97 'a' 108 'l' 0 '\000'
0x7effff240: 0 '\000' 0 '\000' 0 '\000' 0 '\000' 24 '\030' -41 '\327' -34 '\336' 118 'v'
0x7effff248: 0 '\000' -16 '\360' -15 '\361' 118 'v' -108 '\224' -13 '\363' -1 '\377' 126 '-'
0x7effff250: 1 '\001' 0 '\000' 0 '\000' 0 '\000' -100 '\234' 4 '\004' 1 '\001' 0 '\000'
(gdb) c
Continuing.

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Breakpoint 2, strCat_end () at strcat.s:18
18      BX LR
(gdb) x/64cb 0x7effff218
0x7effff218: 72 'H' 97 'a' 115 's' 110 'n' 97 'a' 105 'i' 110 'n' 32 ' '
0x7effff220: 66 'B' 104 'h' 97 'a' 114 'r' 109 'm' 97 'a' 108 'l' 0 '\000'
0x7effff228: 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000'
0x7effff230: 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000' 0 '\000'
0x7effff238: 66 'B' 104 'h' 97 'a' 114 'r' 109 'm' 97 'a' 108 'l' 0 '\000'
0x7effff240: 0 '\000' 0 '\000' 0 '\000' 0 '\000' 24 '\030' -41 '\327' -34 '\336' 118 'v'
0x7effff248: 0 '\000' -16 '\360' -15 '\361' 118 'v' -108 '\224' -13 '\363' -1 '\377' 126 '-'
0x7effff250: 1 '\001' 0 '\000' 0 '\000' 0 '\000' -100 '\234' 4 '\004' 1 '\001' 0 '\000'
(gdb) c
Continuing.
Full Name = Hasnain Bharmal
[Inferior 1 (process 2101) exited normally]
(gdb)

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```

1 //CSE 2312
2 //Quiz4
3 //Name:Hasnain Bharmal
4
5
6 .global strCat
7 .text
8
9
10 strCat:
11     LDRSB R2, [R0], #1 // get character from strTo
12     CMP R2, #0 // is char = null?
13     BNE strCat // no, get next character
14     SUB R0, R0, #1 // back up to null
15 strCat_loop:
16     LDRSB R2, [R1], #1 // get character from strFrom
17     CMP R2, #0 // is character a null?
18     BEQ strCat_end // yes, exit
19     STRB R2, [R0], #1 // store character in strTo
20     B strCat_loop // get next character
21 strCat_end:
22     MOV R2, #0 // add null terminator to strTo
23     STRB R2, [R0]
24     BX LR
25
26
27

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