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vsduser@vsduser-VirtualBox: ~  
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vsduser@vsduser-VirtualBox: ~ x vsduser@vsduser-VirtualBox: ~ x vsduser@vsduser-VirtualBox: ~ x vsduser@vsduser-VirtualBox: ~ x  
factorial.o:      file format elf64-littleriscv  
  
Disassembly of section .text:  
  
000000000000100b0 <main>:  
100b0:      00021537      lui      a0,0x21  
100b4:      ff010113      addi     sp,sp,-16  
100b8:      2d000613      li      a2,720  
100bc:      00600593      li      a1,6  
100c0:      18050513      addi     a0,a0,384 # 21180 <__clzdi2+0x48>  
100c4:      00113423      sd      ra,8(sp)  
100c8:      340000ef      jal     ra,10408 <printf>  
100cc:      00813083      ld      ra,8(sp)  
100d0:      00000513      li      a0,0  
100d4:      01010113      addi     sp,sp,16  
100d8:      00008067      ret  
  
000000000000100dc <register_fini>:  
100dc:      ffff0797      auipc    a5,0xfffff0  
100e0:      f2478793      addi     a5,a5,-220 # 0 <main-0x100b0>  
100e4:      00078863      beqz     a5,100f4 <register_fini+0x18>  
100e8:      00000517      auipc    a0,0x0  
100ec:      11050513      addi     a0,a0,272 # 101f8 <__libc_fini_array>  
100f0:      0c00006f      j        101b0 <atexit>  
100f4:      00008067      ret  
  
000000000000100f8 <start>:
```

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00000000000100dc <register_fini>:

| | | | |
|--------|----------|-------|---------------------------------------|
| 100dc: | ffff0797 | auipc | a5,0xffff0 |
| 100e0: | f2478793 | addi | a5,a5,-220 # 0 <main-0x100b0> |
| 100e4: | 00078863 | beqz | a5,100f4 <register_fini+0x18> |
| 100e8: | 00000517 | auipc | a0,0x0 |
| 100ec: | 11050513 | addi | a0,a0,272 # 101f8 <__libc_fini_array> |
| 100f0: | 0c00006f | j | 101b0 <atexit> |
| 100f4: | 00008067 | ret | |

00000000000100f8 <_start>:

| | | | |
|--------|----------|-------|--|
| 100f8: | 00013197 | auipc | gp,0x13 |
| 100fc: | 91018193 | addi | gp,gp,-1776 # 22a08 <__global_pointer\$> |
| 10100: | 77018513 | addi | a0,gp,1904 # 23178 <_edata> |
| 10104: | 00013617 | auipc | a2,0x13 |
| 10108: | 10460613 | addi | a2,a2,260 # 23208 <__BSS_END__> |
| 1010c: | 40a60633 | sub | a2,a2,a0 |
| 10110: | 00000593 | li | a1,0 |
| 10114: | 1d4000ef | jal | ra,102e8 <memset> |
| 10118: | 00000517 | auipc | a0,0x0 |
| 1011c: | 0e050513 | addi | a0,a0,224 # 101f8 <__libc_fini_array> |
| 10120: | 090000ef | jal | ra,101b0 <atexit> |
| 10124: | 130000ef | jal | ra,10254 <__libc_init_array> |
| 10128: | 00012503 | lw | a0,0(sp) |
| 1012c: | 00810593 | addi | a1,sp,8 |
| 10130: | 00000613 | li | a2,0 |
| 10134: | f7dff0ef | jal | ra,100b0 <main> |
| 10138: | 08c0006f | j | 101c4 <exit> |

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vsduser@vsduser-VirtualBox:~$ ./a.out  
The factorial of 10 is 3628800.  
vsduser@vsduser-VirtualBox:~$ gcc factorial.c  
vsduser@vsduser-VirtualBox:~$ ./a.out  
The factorial of 6 is 720.  
vsduser@vsduser-VirtualBox:~$ riscv64-unknown-elf-gcc -Ofast -mabi=lp64 -march=rv64i -o factorial.o factorial.c  
vsduser@vsduser-VirtualBox:~$ spike pk factorial.o  
bbl loader  
The factorial of 6 is 720.  
vsduser@vsduser-VirtualBox:~$ spike -d pk factorial.o  
(spike) until 0 100b0  
Bad or missing arguments for command until  
(spike) q  
vsduser@vsduser-VirtualBox:~$ riscv64-unknown-elf-gcc -O1 -mabi=lp64 -march=rv64i -o factorial.o factorial.c  
vsduser@vsduser-VirtualBox:~$ riscv64-unknown-elf-gcc -Ofast -mabi=lp64 -march=rv64i -o factorial.o factorial.c  
vsduser@vsduser-VirtualBox:~$ cat factorial.c  
#include <stdio.h>  
  
int main() {  
    int n = 6; // Predefined number  
    unsigned long long factorial = 1; // Use unsigned long long for large results  
  
    for (int i = 1; i <= n; i++) {  
        factorial *= i; // Multiply each number from 1 to n  
    }  
  
    printf("The factorial of %d is %llu.\n", n, factorial);  
  
    return 0;  
}
```