

home / study / engineering / computer science / operating systems / solutions manual / modern operating systems / 4th edition

# Modern Operating Systems | (4th Edition)

## Problem

Consider the following piece of C code:

```
void main( ) {fork( );fork( );exit( );}
```

How many child processes are created upon execution of this program?

## Step-by-step solution

### Step 1 of 2

- Multitasking operating systems create a multitasking environment using child processes.
- A child process is a copy of the parent and inherits most of its attributes.
- A child process is created using a fork() statement which is a system call implemented in the kernel. It returns the process ID of the process just created.

[Comment](#)

### Step 2 of 2

- Consider the C code given in the exercise.
- To find how many child processes were created when the program was executed follow below steps:-
  - o The main function calls fork() statement twice before exiting.



**Chegg Study**

TEXTBOOK SOLUTIONS EXPERT Q&A

Search



Chapter 2, Problem 39P

Bookmark

Show all steps: ON

Chapter 2



Figure 1: demonstrates the number of processes after the first fork call.

o After the second fork() call, both child1 and parent process make a copy of themselves. the status of child processes created is given using a tree structure below:-

27P

28P

29P

30P

31P

32P

33P

34P

35P

36P

37P

38P

39P

40P

41P

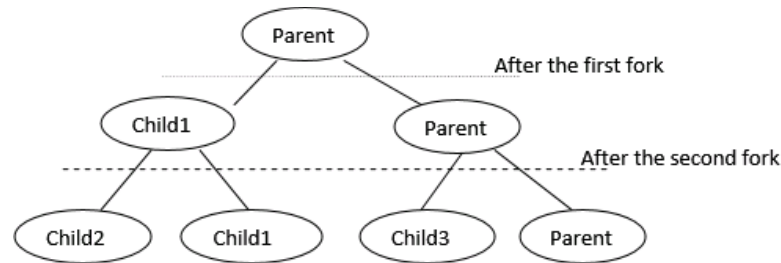


Figure 2: demonstrates the number of processes after the second fork call.

o From the above diagram it is clear that after the second fork, four processes exist. They are Parent, child1, child2 and child3. So, three child processes were created while the parent already existed.

Hence, when executed the given 'C' code creates 3 child processes.

[Comment](#)

Was this solution helpful?

0

0

## Computer Science Chegg tutors who can help right now



**Nathan S.**  
UConn

817



**Tanay B.**  
BITS Pilani KK Birla Go...

64



**Vishwajit B.**  
BITS Pilani, Pilani Cam...

265



**Shiva C.**  
Indian Institute of Tec...

28



**David C.**  
Missouri University of ...

78

[FIND ME A TUTOR](#)

### ABOUT CHEGG

Media Center  
College Marketing  
Privacy Policy  
Your CA Privacy Rights  
Terms of Use  
General Policies  
Intellectual Property Rights

### RESOURCES

Site Map  
Mobile  
Publishers  
Join Our Affiliate Program  
Advertising Choices

### TEXTBOOK LINKS

Return Your Books  
Textbook Rental  
eTextbooks  
Used Textbooks  
Cheap Textbooks  
College Textbooks  
Sell Textbooks

### STUDENT SERVICES

Chegg Play  
Chegg Coupon  
Scholarships  
Career Search  
Internships  
College Search  
College Majors

### COMPANY

Jobs  
Customer Service  
Give Us Feedback  
Chegg For Good  
Become a Tutor

### LEARNING SERVICES

Online Tutoring  
Chegg Study Help  
Solutions Manual  
Tutors by City  
GPA Calculator  
Test Prep

Investor Relations  
Enrollment Services

Scholarship  
Redemption



**Over 6 million  
trees planted**

© 2003-2017 Chegg Inc. All rights reserved.