



# 天津理工大学

计算机科学与工程学院

## 实验报告

2017 至 2018 学年 第 二 学期

课程名称		Linux 操作系统					
学号		20152180	学生姓名	王帆	年级	2015	
专业		计算机科学与技术	教学班号	1	实验地点	7-215	
实验时间		2018 年 月 日 第 节 至 月 日 第 节					
考核标准	实验过程 25 分	程序运行 20 分	回答问题 15 分	实验报告 30 分	特色功能 5 分	考勤违纪情况 5 分	实验成绩
成绩栏							
考核内容	评价在实验课堂中的表现,包括实验态度、操作过程等内容。	<input type="radio"/> 功能完善 <input type="radio"/> 功能不全 <input type="radio"/> 有小错 <input type="radio"/> 无法运行	<input type="radio"/> 正确 <input type="radio"/> 基本正确 <input type="radio"/> 有提示 <input type="radio"/> 无法回答	<input type="radio"/> 完整 <input type="radio"/> 较完整 <input type="radio"/> 一般 <input type="radio"/> 内容少 <input type="radio"/> 无报告	<input type="radio"/> 有 <input type="radio"/> 无	<input type="radio"/> 有 <input type="radio"/> 无	其它批改意见:  教师签字:

实验（ 2 ）	实验名称	进程调度的操作
软件环境	Linux 操作系统	
硬件环境	微机一台	
实验目的		
<p>通过实际操作：</p> <p>1. 理解进程的概念；</p> <p>2. 掌握进程的管理机制；</p> <p>3. 掌握进程及其状态操作的各种命令；</p> <p>4. 掌握进程调度的各种操作。</p>		
实验内容		
<p>实验要求：</p> <p>学生应预习进程与作业管理的内容，掌握进程调度的原理与方式，以及 cron 执行计划任务的特点。</p> <p>实验任务：</p> <p>1. 查看并创建用户的计划任务列表 crontab 文件；</p> <p>1) 查看 crontab 命令的帮助信息；</p> <p>2) 查看用户的计划任务列表；</p> <p>2. 通过 crontab 文件对调度进程的计划任务进行编排操作。</p> <p>1) 建立 crontab 文件；</p> <p>2) 使用 crontab 命令安装 crontab 文件，安排计划任务；</p> <p>3) 查看计划任务表，确认计划任务是否已被安排；</p> <p>4) 删除计划任务列表。</p>		
实验过程与实验结果		

# 1. 查看并创建用户的计划任务列表 crontab 文件;

## 1) 查看 crontab 命令的帮助信息;

在终端下键入 info crontab, 进入 crontab 帮助手册:

```
duke@lab-tjut: ~
CRONTAB(1)                                General Commands Manual                                CRONTAB(1)

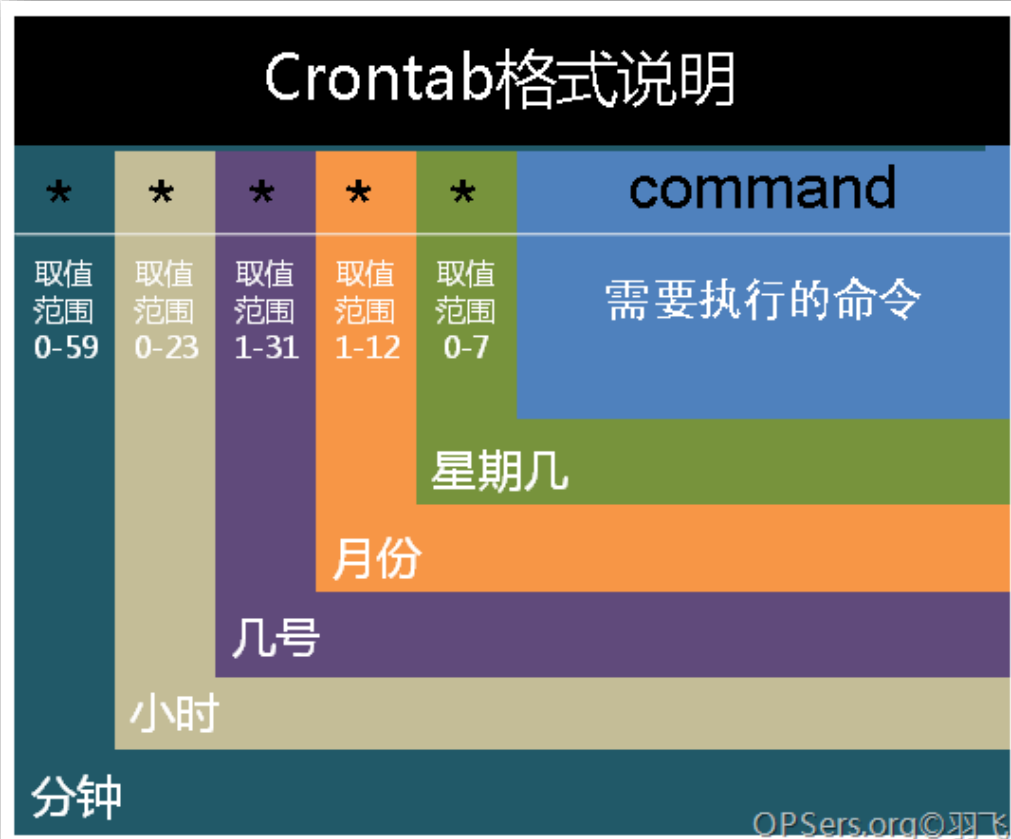
NAME
    crontab - maintain crontab files for individual users (Vixie Cron)

SYNOPSIS
    crontab [ -u user ] file
    crontab [ -u user ] [ -i ] { -e | -l | -r }

DESCRIPTION
    crontab is the program used to install, deinstall or list the tables
    used to drive the cron(8) daemon in Vixie Cron.  Each user can have
    their own crontab, and though these are files in
    /var/spool/cron/crontabs, they are not intended to be edited directly.

    If the /etc/cron.allow file exists, then you must be listed (one user
    per line) therein in order to be allowed to use this command.  If the
    /etc/cron.allow file does not exist but the /etc/cron.deny file does
    exist, then you must not be listed in the /etc/cron.deny file in order
    to use this command.

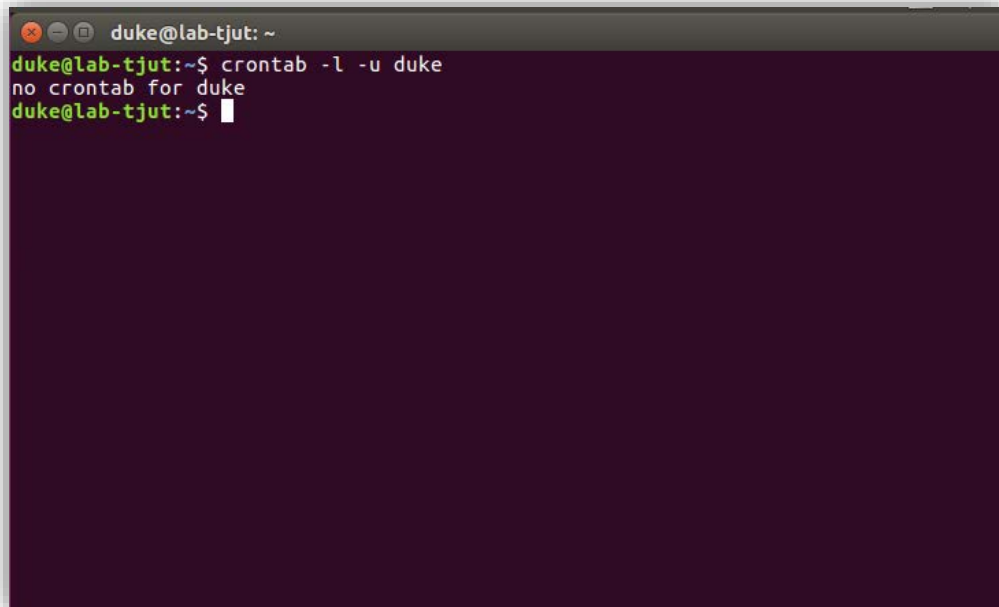
    If neither of these files exists, then depending on site-dependent con -
    -----Info: (*manpages*)crontab, 382 lines --Top-----
    No menu item 'crontab' in node '(dir)Top'.
```



2) 查看用户的计划任务列表;

查看特定用户的计划任务列表:

在终端下键入 `crontab -l -u duke` 列出 duke 用户的所有定时任务, 如下:

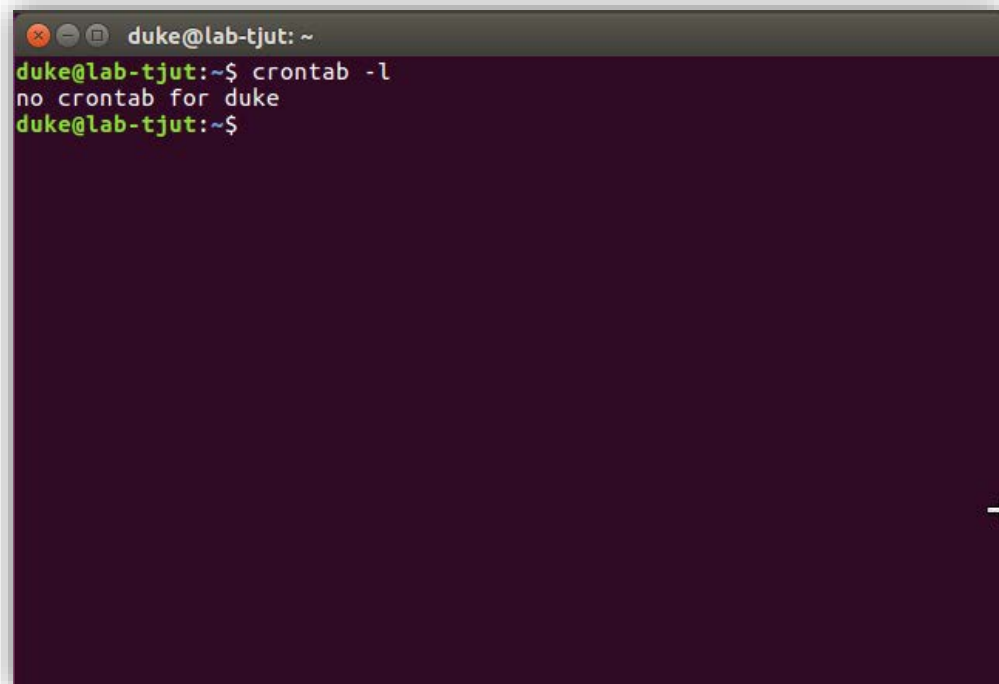


```
duke@lab-tjut: ~  
duke@lab-tjut:~$ crontab -l -u duke  
no crontab for duke  
duke@lab-tjut:~$
```

终端提示 no crontab for duke, 说明用户 duke 目前没有计划任务。

查看当前用户的计划任务列表:

在终端下键入 `crontab -l` 列出当前用户的所有定时任务, 如下:



```
duke@lab-tjut: ~  
duke@lab-tjut:~$ crontab -l  
no crontab for duke  
duke@lab-tjut:~$
```

终端提示 no crontab for duke, 说明用户 duke 目前没有计划任务。

## 2. 通过 crontab 文件对调度进程的计划任务进行编排操作。

### 1) 建立 crontab 文件;

在终端下键入 `crontab -e`，提示当前无 crontab 文件，选择编辑器并新建如下：

```
duke@lab-tjut: ~  
duke@lab-tjut:~$ crontab -e  
no crontab for duke - using an empty one  
  
Select an editor. To change later, run 'select-editor'.  
 1. /bin/ed  
 2. /bin/nano <---- easiest  
 3. /usr/bin/vim.tiny  
  
Choose 1-3 [2]: 3
```

进入 VI 编辑器，编辑当前 crontab 文件，可以看到提供了一些注解作说明。

```
duke@lab-tjut: ~  
# Edit this file to introduce tasks to be run by cron.  
#  
# Each task to run has to be defined through a single line  
# indicating with different fields when the task will be run  
# and what command to run for the task  
#  
# To define the time you can provide concrete values for  
# minute (m), hour (h), day of month (dom), month (mon),  
# and day of week (dow) or use '*' in these fields (for 'any').#  
# Notice that tasks will be started based on the cron's system  
# daemon's notion of time and timezones.  
#  
# Output of the crontab jobs (including errors) is sent through  
# email to the user the crontab file belongs to (unless redirected).  
#  
# For example, you can run a backup of all your user accounts  
# at 5 a.m every week with:  
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/  
#  
# For more information see the manual pages of crontab(5) and cron(8)  
#  
# m h dom mon dow  command  
~  
"/tmp/crontab.4ZSo19/crontab" 22L, 888C
```

在 crontab 中输入 `0 3 * * 1 ls /etc` 并保存, 实现在每周一早上三点执行 `ls /etc` 命令。

```
duke@lab-tjut: ~  
  
# Each task to run has to be defined through a single line  
# indicating with different fields when the task will be run  
# and what command to run for the task  
#  
# To define the time you can provide concrete values for  
# minute (m), hour (h), day of month (dom), month (mon),  
# and day of week (dow) or use '*' in these fields (for 'any').#  
# Notice that tasks will be started based on the cron's system  
# daemon's notion of time and timezones.  
#  
# Output of the crontab jobs (including errors) is sent through  
# email to the user the crontab file belongs to (unless redirected).  
#  
# For example, you can run a backup of all your user accounts  
# at 5 a.m every week with:  
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/  
#  
# For more information see the manual pages of crontab(5) and cron(8)  
#  
# m h dom mon dow  command  
0 3 * * 1 ls /etc  
~  
-- REPLACE --
```

再次查看 crontab 文件, 可以看到已经保存。

```
duke@lab-tjut: ~  
duke@lab-tjut:~$ crontab -l  
  
# Each task to run has to be defined through a single line  
# indicating with different fields when the task will be run  
# and what command to run for the task  
#  
# To define the time you can provide concrete values for  
# minute (m), hour (h), day of month (dom), month (mon),  
# and day of week (dow) or use '*' in these fields (for 'any').#  
# Notice that tasks will be started based on the cron's system  
# daemon's notion of time and timezones.  
#  
# Output of the crontab jobs (including errors) is sent through  
# email to the user the crontab file belongs to (unless redirected).  
#  
# For example, you can run a backup of all your user accounts  
# at 5 a.m every week with:  
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/  
#  
# For more information see the manual pages of crontab(5) and cron(8)  
#  
# m h dom mon dow  command  
0 3 * * 1 ls /etc  
duke@lab-tjut:~$
```

2) 使用 `crontab` 命令安装 crontab 文件, 安排计划任务;  
对于位于 `/home` 下的 crontab 文件, 使用 `crontab <filename>` 载入 crontab 计划任务中, 如图:

```
root@lab-tjut: /home/duke
root@lab-tjut: /home/duke# crontab duke
```

- 3) 查看计划任务表，确认计划任务是否已被安排；  
键入 `crontab -l`，查看计划任务安排情况，如图：

```
root@lab-tjut: /home/duke
root@lab-tjut:/home/duke# crontab -l
# DO NOT EDIT THIS FILE - edit the master and reinstall.
# (/tmp/crontab.4ZSo19/crontab installed on Tue May  8 11:27:22 2018)
# (Cron version -- $Id: crontab.c,v 2.13 1994/01/17 03:20:37 vixie Exp $)

# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h  dom mon dow   command
0 8 * * 1 ls /home
0 3 * * 1 ls /etc
```

- 4) 删除计划任务列表。  
在终端下键入 `crontab -r`，删除当前用户的 `crontab` 文件，如下：

```
root@lab-tjut: /home/duke
root@lab-tjut:/home/duke# crontab -r
```

```
root@lab-tjut: /home/duke
root@lab-tjut:/home/duke# crontab -l
no crontab for root
```