实验报告

实验名称	实验一 Hadoop 本地运行模式		
实验教室	丹青 922	实验日期	2021 年 5 月 23 日
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一、 实验目的

1. 掌握 JDK 的安装和配置；

2. 掌握 Hadoop 本地模式的安装和配置。

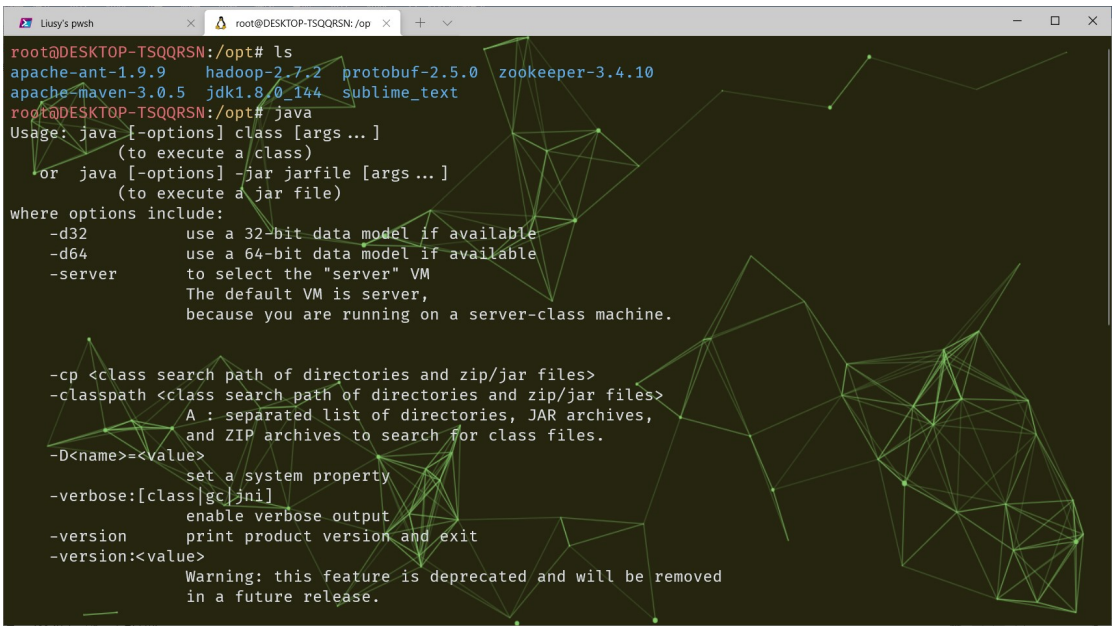
二、 实验环境

（1）计算机的硬件配置 PC 系列微机。

（2）计算机的软件配置 VMware 虚拟机软件及 Ubuntu 虚拟机。

三、 实验内容及结果

1. 下载安装超星在线课提供的 JDK ，版本为 1.8.0_144。



2. 验证所安装 Java 的版本；

```
root@DESKTOP-TSQQRSN:/opt# java -version
java version "1.8.0_144"
Java(TM) SE Runtime Environment (build 1.8.0_144-b01)
Java HotSpot(TM) 64-Bit Server VM (build 25.144-b01, mixed mode)
root@DESKTOP-TSQQRSN:/opt#
```

3. 下载安装超星在线课提供的 Hadoop ，版本为 2.7.2 ；

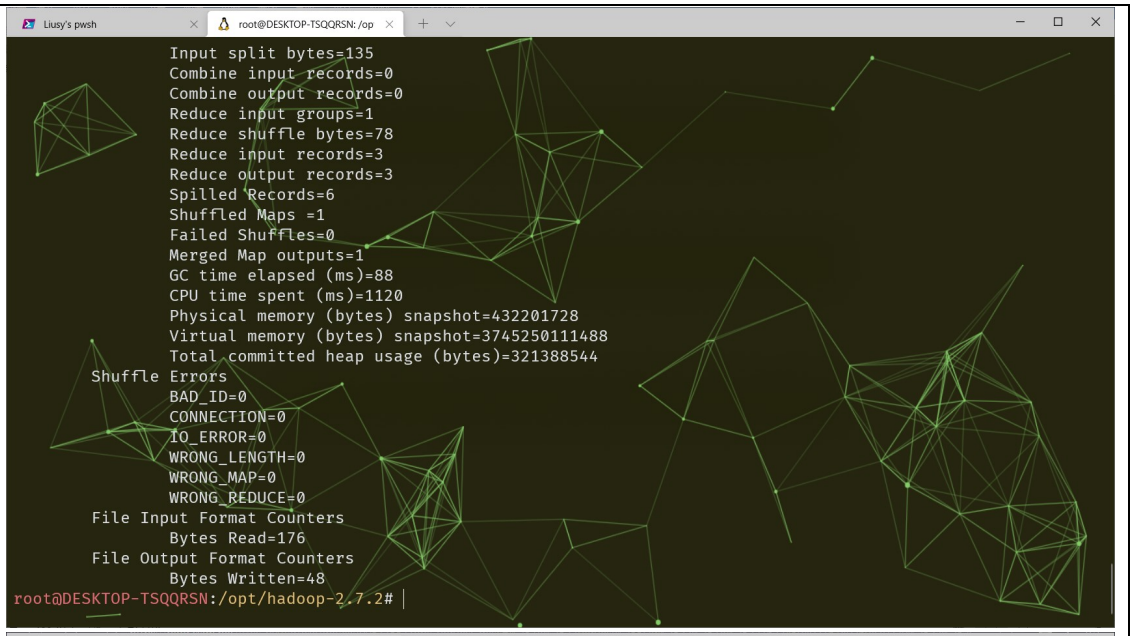
```
root@DESKTOP-TSQQRSN:/opt# ls
apache-ant-1.9.9    hadoop-2.7.2  protobuf-2.5.0  zookeeper-3.4.10
apache-maven-3.0.5  jdk1.8.0_144  sublime_text
root@DESKTOP-TSQQRSN:/opt# hadoop
Usage: hadoop [--config confdir] [COMMAND | CLASSNAME]
  CLASSNAME            run the class named CLASSNAME
 or
  where COMMAND is one of:
  fs                   run a generic filesystem user client
  version              print the version
  jar <jar>            run a jar file
                       note: please use "yarn jar" to launch
                             YARN applications, not this command.
  checknative [-a|-h]  check native hadoop and compression libraries availability
  distcp <srcurl> <desturl> copy file or directories recursively
  archive -archiveName NAME -p <parent path> <src>* <dest> create a hadoop archive
  classpath            prints the class path needed to get the
  credential           interact with credential providers
                       Hadoop jar and the required libraries
  daemonlog            get/set the log level for each daemon
  trace                view and modify Hadoop tracing settings

Most commands print help when invoked w/o parameters.
root@DESKTOP-TSQQRSN:/opt#
```

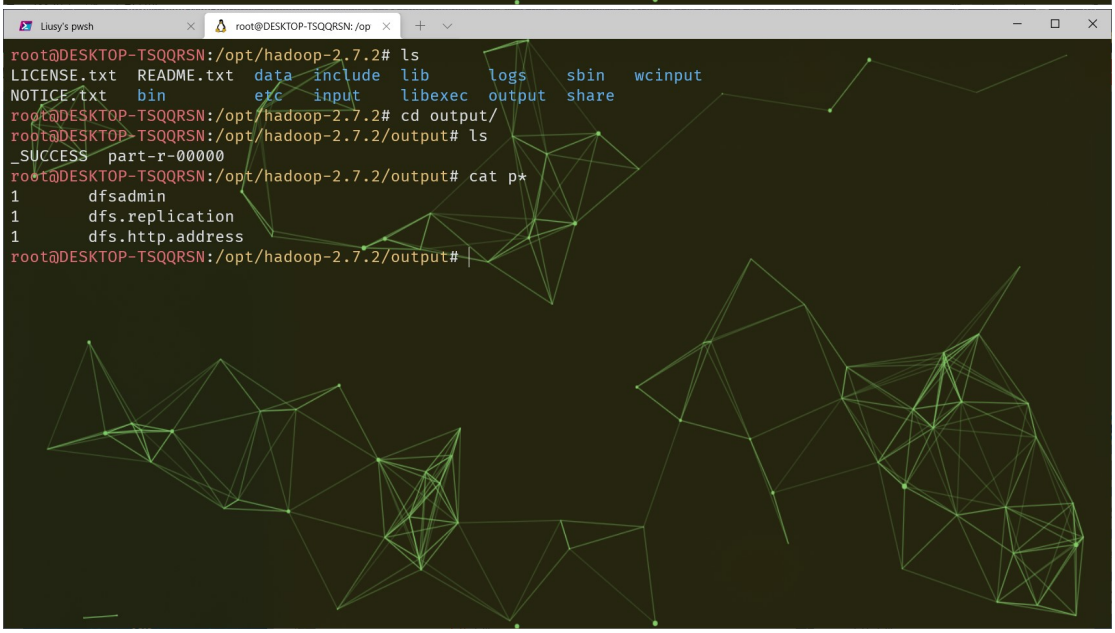
4. 验证所安装 Hadoop 的版本；

```
root@DESKTOP-TSQQRSN:/opt# hadoop version
Hadoop 2.7.2
Subversion https://git-wip-us.apache.org/repos/asf/hadoop.git -r b165c4fe8a74265c792ce23f546c64604acf0e41
Compiled by jenkins on 2016-01-26T00:08Z
Compiled with protoc 2.5.0
From source with checksum d0fda26633fa762bff87ec759ebe689c
This command was run using /opt/hadoop-2.7.2/share/hadoop/common/hadoop-common-2.7.2.jar
```

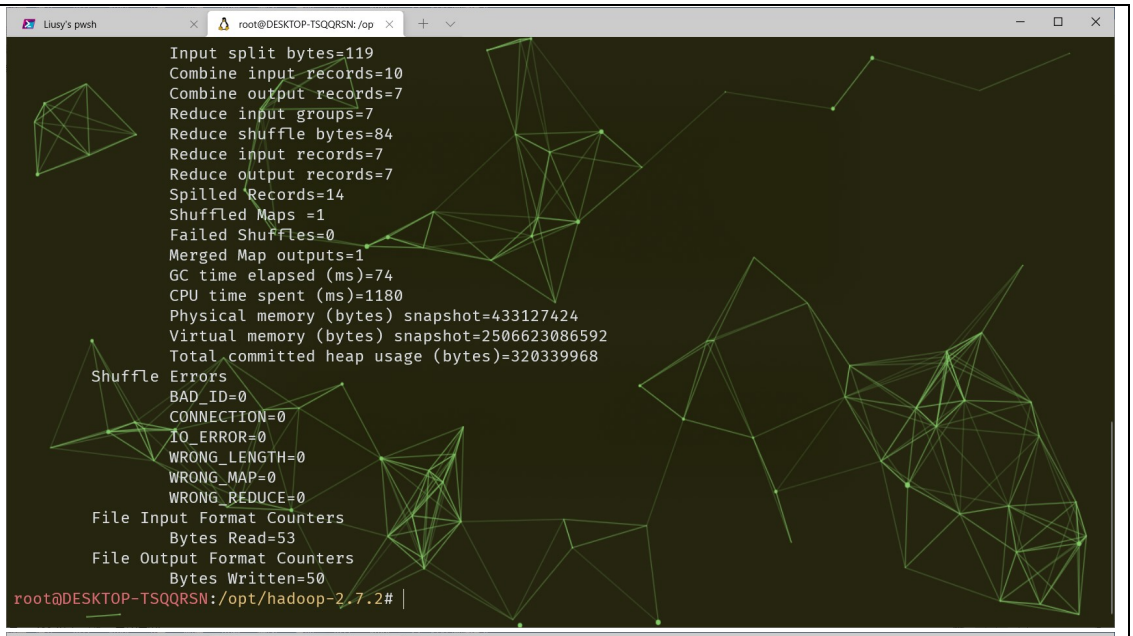
5. 运行 Apache Hadoop 官方提供的 grep 案例；

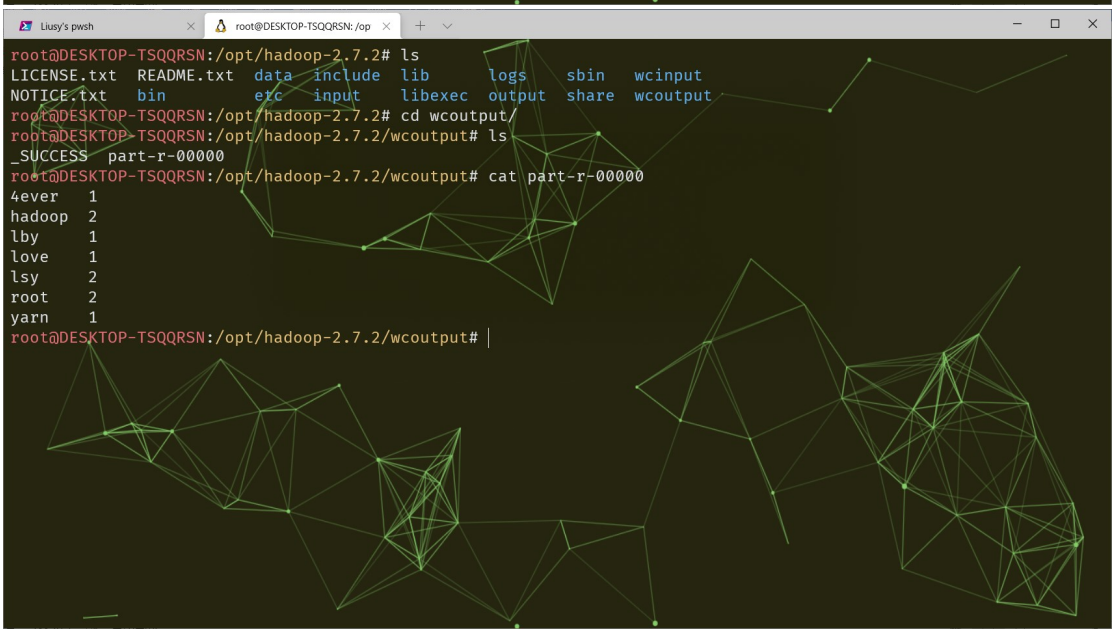
```
root@DESKTOP-TSQQRSN:/opt/hadoop-2.7.2# mkdir input
root@DESKTOP-TSQQRSN:/opt/hadoop-2.7.2# cp etc/hadoop/*.xml input
root@DESKTOP-TSQQRSN:/opt/hadoop-2.7.2# hadoop jar s
sbin/  share/
root@DESKTOP-TSQQRSN:/opt/hadoop-2.7.2# hadoop jar share/hadoop/mapreduce/hadoop-mapreduce-examples-2.7.2.jar
grep input output 'dfs[a-z.]+'
```





6. 运行 Apache Hadoop 官方提供的 WordCount 案例。


Liusy's pwsh
root@DESKTOP-TSQQRSN: /op
Input split bytes=119
Combine input records=10
Combine output records=7
Reduce input groups=7
Reduce shuffle bytes=84
Reduce input records=7
Reduce output records=7
Spilled Records=14
Shuffled Maps =1
Failed Shuffles=0
Merged Map outputs=1
GC time elapsed (ms)=74
CPU time spent (ms)=1180
Physical memory (bytes) snapshot=433127424
Virtual memory (bytes) snapshot=2506623086592
Total committed heap usage (bytes)=320339968
Shuffle Errors
BAD_ID=0
CONNECTION=0
IO_ERROR=0
WRONG_LENGTH=0
WRONG_MAP=0
WRONG_REDUCE=0
File Input Format Counters
Bytes Read=53
File Output Format Counters
Bytes Written=50
root@DESKTOP-TSQQRSN:/opt/hadoop-2.7.2#


Liusy's pwsh
root@DESKTOP-TSQQRSN: /op
root@DESKTOP-TSQQRSN:/opt/hadoop-2.7.2# ls
LICENSE.txt README.txt data include lib logs sbin wcinput
NOTICE.txt bin etc input libexec output share wcoutput
root@DESKTOP-TSQQRSN:/opt/hadoop-2.7.2# cd wcoutput/
root@DESKTOP-TSQQRSN:/opt/hadoop-2.7.2/wcoutput# ls
_SUCCESS part-r-00000
root@DESKTOP-TSQQRSN:/opt/hadoop-2.7.2/wcoutput# cat part-r-00000
4ever 1
hadoop 2
lby 1
love 1
lsy 2
root 2
yarn 1
root@DESKTOP-TSQQRSN:/opt/hadoop-2.7.2/wcoutput#

四、 实验过程分析与讨论

主要的收获是学会了通过阅读官方文档解决问题，学习了如何安装 JDK 和 Hadoop，如何让配置 JAVA_HOME 路径并写入 PATH。最后自己成功完成了官网所给的两个案例，Grep 和 WordCount。

五、指导教师意见

指导教师签字：卢洋