PageRank作业

源码和注释

```
println("Hello, world!") // 输出 Hello World
var links=sc.parallelize(Array(("A",List("B","C","D")),("B",List("A")),("C",List("A","B")),("D",List("B
var ranks=links.mapValues(x=>1.0)//用links的键值生成map，值为1.0
links.first
ranks.first
for(i <- 1 to 10)
{

    val join1=links.join(ranks)
    /*join按键值合并links和ranks，i=1时生成
    (B,(List(A),1.0))
    (A,(List(B, C, D),1.0))
    (C,(List(A, B),1.0))
    (D,(List(B, C),1.0))*/
    val contribsRdd = join1.flatMap{
        case(srcURL, (link, rank)) => link.map(destURL => (destURL, rank / link.size))}
    /* destUTL代表link中某一个元素如B
    case模式匹配将join1的map分解为三部分，其中link=List("B","C","D")+List....
    link.map(destURL => (destURL, rank / link.size))输出，
    (A,1.0)
    (B,0.3333333333333333)
    (C,0.3333333333333333)
    (D,0.3333333333333333)
    (A,0.5)
    (B,0.5)
    (B,0.5)
    (C,0.5)*/
    ranks = contribsRdd.reduceByKey(_ + _).mapValues(0.15 + _ * 0.85)
    /*_ + _就是(x,y) => x+y
    寻找相同key的数据，当找到这样的两条记录时会对其value(分别记为x,y)做(x,y) => x+y的处理，即只保留求和之后的数据作
    ranks.take(4).foreach(println)//获取RDD中从0到3下标的元素（不排序）并输出
    println()//换行，便于观察
}
ranks.saveAsTextFile("ranks")//保存在ranks文件夹下
```

结果截图

```
yxh@yxh-System-Product-Name:~/Documents/homework/scala$ ~/Documents/spark-3.0.0-preview-bin-hadoop3.2/bin/spark-shell -i ./1.scala
19/11/27 22:01:49 WARN Utils: Your hostname, yxh-System-Product-Name resolves to a loopback address: 127.0.1.1; using 219.224.167.248 instead (on interface enp3s0)
19/11/27 22:01:49 WARN Utils: Set SPARK_LOCAL_IP if you need to bind to another address
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by org.apache.spark.unsafe.Platform (file:/home/yxh/Documents/spark-3.0.0-preview-bin-hadoop3.2/jars/spark-unsafe_2.12-3.0.0-preview.jar) to constructor java.nio.DirectByteBuffer(long,int)
WARNING: Please consider reporting this to the maintainers of org.apache.spark.unsafe.Platform
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
19/11/27 22:01:49 WARN NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable
Using Spark's default log4j profile: org/apache/spark/log4j-defaults.properties
Setting default log level to "WARN".
To adjust logging level use sc.setLogLevel(newLevel). For SparkR, use setLogLevel(newLevel).
19/11/27 22:01:54 WARN Utils: Service 'SparkUI' could not bind on port 4040. Attempting port 4041.
19/11/27 22:01:54 WARN Utils: Service 'SparkUI' could not bind on port 4041. Attempting port 4042.
Spark context Web UI available at http://219.224.167.248:4042
Spark context available as 'sc' (master = local[*], app id = local-1574863314212).
Spark session available as 'spark'.
Hello, world!
(B,1.2833333333333332)
(A,1.4249999999999998)
(C,0.8583333333333333)
(D,0.43333333333333335)

(B,1.1027083333333332)
(A,1.6056249999999999)
(C,0.7379166666666667)
(D,0.55375)

(B,1.1538854166666666)
(A,1.4009166666666664)
(C,0.8402708333333333)
(D,0.6049270833333332)

(B,1.161135503472222)
(A,1.487917708333333)
(C,0.8040203993055554)
(D,0.5469263888888888)

(B,1.1457290690104163)
(A,1.4786738476562495)
(C,0.8040203993055554)
(D,0.5715766840277777)

(B,1.1535863505859372)
(A,1.4655783783637146)
(C,0.8118776808810763)
(D,0.5689575901692707)

(B,1.1521021973994496)
(A,1.4755964123725038)
(C,0.8070541830249925)
(D,0.5652472072030524)

(B,1.1513137410191285)
(A,1.4722848955751537)
(C,0.8083157132335067)
(D,0.5680856501722094)

(B,1.152117966527056)
(A,1.4721508579904996)
(C,0.8085837884028159)
(D,0.567147387079626 9)

(B,1.151795159344013)
(A,1.4729483816191942)
(C,0.8081470492728162)
(D,0.567109409763974 8)
```