

## Lab 8

### 1). Screenshot of your envlist.py from Step 12

```

[ec2-user@ip-10-0-11-80 PyHipp]$ cat envlist.py
#!/data/miniconda3/envs/env1/bin/python

from filelock import FileLock
import hickle
import sys

# set constants
file_path = "/data/picasso/envlist.hkl"
lock_path = "/data/picasso/envlist.hkl.lock"
time_out_secs = 60

# program modes
READ_MODE = 0
WRITE_MODE = 1
RESET_MODE = 2

# get number of arguments
nargs = len(sys.argv)
if nargs > 3:
    print('Usage: envlist; envlist env; envlist envprefix nenvs')
    exit
elif nargs > 2:
    # creates or re-creates the list of environments
    pmode = RESET_MODE
    # get prefix for environment name
    envprefix = sys.argv[1]
    # get number of environments to create
    nenvs = sys.argv[2]
elif nargs > 1:
    # returns env to the list of environments
    pmode = WRITE_MODE
    # get name of environment to return
    env = sys.argv[1]
else:
    # gets name of an environment to use
    pmode = READ_MODE


# creates a lock for the file so it can only be accessed one at a time
lock = FileLock(lock_path, timeout=time_out_secs)

with lock:
    if pmode == RESET_MODE:
        # create a list (named clist) of nenvs environments with the
        # prefix envprefix
        # add code here
        clist=[None]*int(nenvs)
        for i in range(int(nenvs)):
            clist[i] = envprefix + str(i)
    else:
        # load hickle file
        clist = hickle.load(file_path)

        if pmode == WRITE_MODE:
            # append item to end of list # item name is argument 'env'
            # add code here
            clist.append(env)
        else:
            # get and remove env from clist
            # add code here
            env = clist.pop(0)
            # return env name
            print(env)

    # save hickle file
    hickle.dump(clist, file_path, mode="w")
(env1) [ec2-user@ip-10-0-11-80 PyHipp]$
```

## 2). Screenshots of the 3 different types of running envlist.py, and the list created from Step 12



```
arthur — ec2-user@ip-10-0-11-80:/data/picasso/20181105 — ssh -i ./MyKeyPair.pem ec2-user@18.141.57.231 — 181x63
(env1) [ec2-user@ip-10-0-11-80 20181105]$ /data/src/PyHipp/envlist.py cenv 64
(env1) [ec2-user@ip-10-0-11-80 20181105]$ /data/src/PyHipp/envlist.py
cenv0
(env1) [ec2-user@ip-10-0-11-80 20181105]$ /data/src/PyHipp/envlist.py cenv0
(env1) [ec2-user@ip-10-0-11-80 20181105]$

arthur — IPython: src/PyHipp — ssh -i ./MyKeyPair.pem ec2-user@18.141.57.231 — 183x67
In [3]: len(clist)
Out[3]: 64

In [4]: clist
Out[4]:
['cenv1',
 'cenv2',
 'cenv3',
 'cenv4',
 'cenv5',
 'cenv6',
 'cenv7',
 'cenv8',
 'cenv9',
 'cenv10',
 'cenv11',
 'cenv12',
 'cenv13',
 'cenv14',
 'cenv15',
 'cenv16',
 'cenv17',
 'cenv18',
 'cenv19',
 'cenv20',
 'cenv21',
 'cenv22',
 'cenv23',
 'cenv24',
 'cenv25',
 'cenv26',
 'cenv27',
 'cenv28',
 'cenv29',
 'cenv30',
 'cenv31',
 'cenv32',
 'cenv33',
 'cenv34',
 'cenv35',
 'cenv36',
 'cenv37',
 'cenv38',
 'cenv39',
 'cenv40',
 'cenv41',
 'cenv42',
 'cenv43',
 'cenv44',
 'cenv45',
 'cenv46',
 'cenv47',
 'cenv48',
 'cenv49',
 'cenv50',
 'cenv51',
 'cenv52',
 'cenv53',
 'cenv54',
 'cenv55',
 'cenv56',
 'cenv57',
 'cenv58',
 'cenv59',
 'cenv60',
 'cenv61',
```

### 3). Screenshot of the timestamps and total time taken from Step 26

Total time taken: 2 hours 44 mins 35 s

```
arthur — ec2-user@ip-10-0-15-99:/data/picasso/20181105 — ssh -i ./MyKeyPair.pem ec2-user@18.141.57.231 — 183x67
(env1) [ec2-user@ip-10-0-15-99 20181105]$ bash /data/src/PyHipp/checkfiles2.sh
Number of hkl files
665
Number of mda files
110
Start Times
==> rplpl-slurm.queue1-dy-r5axlarge-1.449.out <==
time.struct_time(tm_year=2021, tm_mon=11, tm_mday=2, tm_hour=11, tm_min=47, tm_sec=2, tm_wday=1, tm_yday=306, tm_isdst=0)
==> rs1a-slurm.queue1-dy-r5a2xlarge-1.451.out <==
time.struct_time(tm_year=2021, tm_mon=11, tm_mday=2, tm_hour=11, tm_min=54, tm_sec=31, tm_wday=1, tm_yday=306, tm_isdst=0)
==> rs2a-slurm.queue1-dy-r5a2xlarge-2.452.out <==
time.struct_time(tm_year=2021, tm_mon=11, tm_mday=2, tm_hour=11, tm_min=54, tm_sec=33, tm_wday=1, tm_yday=306, tm_isdst=0)
==> rs3a-slurm.queue1-dy-r5a2xlarge-3.453.out <==
time.struct_time(tm_year=2021, tm_mon=11, tm_mday=2, tm_hour=11, tm_min=54, tm_sec=31, tm_wday=1, tm_yday=306, tm_isdst=0)
==> rs4a-slurm.queue1-dy-r5a2xlarge-4.454.out <==
time.struct_time(tm_year=2021, tm_mon=11, tm_mday=2, tm_hour=11, tm_min=54, tm_sec=31, tm_wday=1, tm_yday=306, tm_isdst=0)
==> rse-slurm.queue1-dy-r5axlarge-1.450.out <==
time.struct_time(tm_year=2021, tm_mon=11, tm_mday=2, tm_hour=11, tm_min=47, tm_sec=2, tm_wday=1, tm_yday=306, tm_isdst=0)
==> slurm-455.out <==
sbatch --dependency=afterok:511:512:513:514:515:518:519:520:521:522:523:532:533:535:548:549:550:551:552:558:559:560:561:562:572:573:574:575:576:577:578:579:580:581:582:583:584:585:586
:587:588:589:590:591:592:593:594:595:596:597:598:599:600:601:602:603:604:605:606:607:608:609:610:611:612:613:614:615:616:617:618:619:620:621:622:623:624:625:626:627:628:629:630:631:63
2:633:634:635:636:637:638:639:640:641:642:643:644:645:646:647:648:649:650:651:652:653:654:655:656:657:658:659:660:661:662:663:664:665:666:667:668:669:670:671:672:673:674:675:676:677:6
78:679:680:681:682:683:684:685:686:687:688:689:690:691:692:693:694:695:696:697:698:699:700:701:702:703:704:705:706:707:708:709:710:711:712:713:714:715:716:717:718:719:720:721:722:723:
724:725:726:727:728:729:730:731:732:733:734:735:736:737:738:739:740:741:742:743:744:745:746:747:748:749:750:751:752:753:754:755:756:757:758:759:760:761:762:763:764:765:766:767:768:769
:770:771:772:773:774:775:776:777:778:779:780:781:782:783:784:785:786:787:788:789:790:791:792:793:794:795:796:797:798:799:800:801:802:803:804:805:806:807:808:809:810:811:812:813:814:81
5:816:817:818:819:820:821:822:823:824:825:826:827:828:829:830:831:832:833:834:835:836:837:838:839:840:841:842:843:844:845:846:847:848:849:850:851:852:853:854:855:856:857:858:859:860:8
61:862:863:864:865:866:867:868:869:870:871:872:873:874:875:876:877:878:879:880:881:882:883:884:885:886:887:888:889:890:891:892:893:894:895:896:897:898:899:900:901:902:903:904:905:906:907:908:909:910:911:912:913:914:915:916:917:918:919:920:921:922:923:924:925:926:927:928:929:930:931:932:933:934:935:936:937:938:939:940:941:942:943:944:945:946:947:948:949:950:951:952:953:954:955:956:957:958:959:960:961:962:963:964:965:966:967:968:969:970:971:972:973:974:975:976:977:978:979:980:981:982:983:984:985:986:987:988:989:990:991:992:993:994:995:996:997:998:999:1000:1001:1002:1003:1004:1005:1006:1007:1008:1009:1010:1011:1012:1013:1014:1015:1016:1017:1018:1019:1020:1021:1022:1023:1024:1025:1026:1027:1028:1029:1030:1031:1032:1033:1034:1035:1036:1037:1038:1039:1040:1041:1042:1043:1044:1045:1046:1047:1048:1049:1050:1051:1052:1053:1054:1055:1056:1057:1058:1059:1060:1061:1062:1063:1064:1065:1066:1067:1068:1069:1070:1071:1072:1073:1074:1075:1076:1077:1078:1079:1080:1081:1082:1083:1084:1085:1086:1087:1088:1089:1090:1091:1092:1093:1094:1095:1096:1097:1098:1099:1100:1101:1102:1103:1104:1105:1106:1107:1108:1109:1110:1111:1112:1113:1114:1115:1116:1117:1118:1119:1120:1121:1122:1123:1124:1125:1126:1127:1128:1129:1130:1131:1132:1133:1134:1135:1136:1137:1138:1139:1140:1141:1142:1143:1144:1145:1146:1147:1148:1149:1150:1151:1152:1153:1154:1155:1156:1157:1158:1159:1160:1161:1162:1163:1164:1165:1166:1167:1168:1169:1170:1171:1172:1173:1174:1175:1176:1177:1178:1179:1180:1181:1182:1183:1184:1185:1186:1187:1188:1189:1190:1191:1192:1193:1194:1195:1196:1197:1198:1199:1200:1201:1202:1203:1204:1205:1206:1207:1208:1209:1210:1211:1212:1213:1214:1215:1216:1217:1218:1219:1220:1221:1222:1223:1224:1225:1226:1227:1228:1229:1230:1231:1232:1233:1234:1235:1236:1237:1238:1239:1240:1241:1242:1243:1244:1245:1246:1247:1248:1249:1250:1251:1252:1253:1254:1255:1256:1257:1258:1259:1260:1261:1262:1263:1264:1265:1266:1267:1268:1269:1270:1271:1272:1273:1274:1275:1276:1277:1278:1279:1280:1281:1282:1283:1284:1285:1286:1287:1288:1289:1290:1291:1292:1293:1294:1295:1296:1297:1298:1299:1300:1301:1302:1303:1304:1305:1306:1307:1308:1309:1310:1311:1312:1313:1314:1315:1316:1317:1318:1319:1320:1321:1322:1323:1324:1325:1326:1327:1328:1329:1330:1331:1332:1333:1334:1335:1336:1337:1338:1339:1340:1341:1342:1343:1344:1345:1346:1347:1348:1349:1350:1351:1352:1353:1354:1355:1356:1357:1358:1359:1360:1361:1362:1363:1364:1365:1366:1367:1368:1369:1370:1371:1372:1373:1374:1375:1376:1377:1378:1379:1380:1381:1382:1383:1384:1385:1386:1387:1388:1389:1390:1391:1392:1393:1394:1395:1396:1397:1398:1399:1400:1401:1402:1403:1404:1405:1406:1407:1408:1409:1410:1411:1412:1413:1414:1415:1416:1417:1418:1419:1420:1421:1422:1423:1424:1425:1426:1427:1428:1429:1430:1431:1432:1433:1434:1435:1436:1437:1438:1439:1440:1441:1442:1443:1444:1445:1446:1447:1448:1449:1450:1451:1452:1453:1454:1455:1456:1457:1458:1459:1460:1461:1462:1463:1464:1465:1466:1467:1468:1469:1470:1471:1472:1473:1474:1475:1476:1477:1478:1479:1480:1481:1482:1483:1484:1485:1486:1487:1488:1489:1490:1491:1492:1493:1494:1495:1496:1497:1498:1499:1500:1501:1502:1503:1504:1505:1506:1507:1508:1509:1510:1511:1512:1513:1514:1515:1516:1517:1518:1519:1520:1521:1522:1523:1524:1525:1526:1527:1528:1529:1530:1531:1532:1533:1534:1535:1536:1537:1538:1539:1540:1541:1542:1543:1544:1545:1546:1547:1548:1549:1550:1551:1552:1553:1554:1555:1556:1557:1558:1559:1560:1561:1562:1563:1564:1565:1566:1567:1568:1569:1570:1571:1572:1573:1574:1575:1576:1577:1578:1579:1580:1581:1582:1583:1584:1585:1586:1587:1588:1589:1590:1591:1592:1593:1594:1595:1596:1597:1598:1599:1600:1601:1602:1603:1604:1605:1606:1607:1608:1609:1610:1611:1612:1613:1614:1615:1616:1617:1618:1619:1620:1621:1622:1623:1624:1625:1626:1627:1628:1629:1630:1631:1632:1633:1634:1635:1636:1637:1638:1639:1640:1641:1642:1643:1644:1645:1646:1647:1648:1649:1650:1651:1652:1653:1654:1655:1656:1657:1658:1659:1660:1661:1662:1663:1664:1665:1666:1667:1668:1669:1670:1671:1672:1673:1674:1675:1676:1677:1678:1679:1680:1681:1682:1683:1684:1685:1686:1687:1688:1689:1690:1691:1692:1693:1694:1695:1696:1697:1698:1699:1700:1701:1702:1703:1704:1705:1706:1707:1708:1709:1710:1711:1712:1713:1714:1715:1716:1717:1718:1719:1720:1721:1722:1723:1724:1725:1726:1727:1728:1729:1730:1731:1732:1733:1734:1735:1736:1737:1738:1739:1740:1741:1742:1743:1744:1745:1746:1747:1748:1749:1750:1751:1752:1753:1754:1755:1756:1757:1758:1759:1760:1761:1762:1763:1764:1765:1766:1767:1768:1769:1770:1771:1772:1773:1774:1775:1776:1777:1778:1779:1780:1781:1782:1783:1784:1785:1786:1787:1788:1789:1790:1791:1792:1793:1794:1795:1796:1797:1798:1799:1800:1801:1802:1803:1804:1805:1806:1807:1808:1809:1810:1811:1812:1813:1814:1815:1816:1817:1818:1819:1820:1821:1822:1823:1824:1825:1826:1827:1828:1829:1830:1831:1832:1833:1834:1835:1836:1837:1838:1839:1840:1841:1842:1843:1844:1845:1846:1847:1848:1849:1850:1851:1852:1853:1854:1855:1856:1857:1858:1859:1860:1861:1862:1863:1864:1865:1866:1867:1868:1869:1870:1871:1872:1873:1874:1875:1876:1877:1878:1879:1880:1881:1882:1883:1884:1885:1886:1887:1888: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```



4). Screenshot showing the correct number of files from Step 30

```
[(env1) [ec2-user@ip-10-0-15-99 20181105]$ bash /data/src/PyHipp/checkfiles.sh
Number of hkl files
665
Number of mda files
110
Time taken (s)
tail: cannot open 'pipe-slurm*.out' for reading: No such file or directory
(env1) [ec2-user@ip-10-0-15-99 20181105]$
```

5). Screenshot showing the correct number of files for 20181101 from Step 35

```
[(env1) [ec2-user@ip-10-0-15-99 20181101]$ bash /data/src/PyHipp/checkfiles.sh
Number of hkl files
665
Number of mda files
110
Time taken (s)
tail: cannot open 'pipe-slurm*.out' for reading: No such file or directory
```

6). Screenshot showing the correct number of files for 20181102 from Step 35

```
[(env1) [ec2-user@ip-10-0-15-99 20181102]$ bash /data/src/PyHipp/checkfiles.sh
Number of hkl files
665
Number of mda files
110
Time taken (s)
tail: cannot open 'pipe-slurm*.out' for reading: No such file or directory
```

7). Screenshot showing the correct number of files for the remaining days from Step 35

```
arthur — ec2-user@ip-10-0-15-99:/data/picasso — ssh -i ./MyKeyPair.pem ec2-user@18.141.57.231 — 183x67
((env1) [ec2-user@ip-10-0-15-99 20181101]$ cd ..
((env1) [ec2-user@ip-10-0-15-99 picasso]$ for i in 20180??? 201810??; do echo $i; cd $i; find . -name "*.hkl" | wc -l; cd ..; done
20180702
5
20180704
5
20180705
5
20180706
5
20180710
5
20180713
5
20180716
5
20180717
5
20180718
5
20180719
5
20180723
5
20180724
5
20180725
5
20180726
5
20180727
5
20180730
5
20180731
5
20180801
5
20180802
5
20180803
5
20180810
5
20180813
5
20180814
5
20180817
5
20180823
5
20180824
5
20180827
5
20180828
5
20180829
5
20180907
5
20180912
5
20180914
5
20180919
```

8). Screenshot of your EC2 Dashboard (follow instructions from Lab 4)

The screenshot displays the AWS Management Console's EC2 Dashboard for the Asia Pacific (Singapore) region. The interface is organized into several sections:

- Resources:** A summary table of EC2 resources in the region:

Resource	Count
Instances (running)	1
Dedicated Hosts	0
Elastic IPs	0
Instances	2
Key pairs	1
Load balancers	0
Placement groups	0
Security groups	6
Snapshots	2
Volumes	2
- Launch instance:** A section for launching a new instance, featuring a "Launch instance" button and a "Migrate a server" link. A note states: "Note: Your instances will launch in the Asia Pacific (Singapore) Region".
- Scheduled events:** A section showing no scheduled events for the Asia Pacific (Singapore) region.
- Service health:** A section indicating the service status is "This service is operating normally".
- Zones:** A table listing the available availability zones:

Zone name	Zone ID
ap-southeast-1a	apse1-az1
ap-southeast-1b	apse1-az2
- Account attributes:** A section displaying account details such as the default VPC (vpc-0aaa51d6fba6ab312) and settings for EBS encryption, zones, and EC2 Serial Console.
- Explore AWS:** A section with promotional banners for the Graviton Challenge, Best Price-Performance with AWS Graviton2, and Get Up to 40% Better Price Performance.

## 9). Screenshot of Elastic Compute Cloud charges (follow instructions from Lab 4)

aws Services <span>▼</span> <span>Search for services, features, marketplace products, and docs</span> [Option+S] <span>HE_TV</span> <span>Global</span> <span>Support</span>			
Purchase options			
Cost & Usage Reports			
Cost Categories			
Cost allocation tags			
Cost Management			
Cost Explorer			
Budgets			
Budgets Reports			
Savings Plans			
Preferences			
Billing preferences			
Payment methods			
Consolidated billing			
Tax settings			
	<b>Credits</b>		
	Your Invoiced total will be displayed once an Invoice is issued.		
	<b>Details</b> <span>+ Expand All</span>		
	<b>AWS Service Charges</b>		<b>\$0.00</b>
	CloudWatch		\$0.00
	Data Transfer		\$0.00
	DynamoDB		\$0.00
	Elastic Compute Cloud		\$0.00
	No Region		-\$76.59
	Asia Pacific (Singapore)		\$76.59
	Amazon Elastic Compute Cloud running Linux/UNIX		\$69.07
	\$0.00 per Linux t2.micro instance-hour (or partial hour) under monthly free tier		\$0.00
	\$0.146 per On Demand Linux m5n.large Instance Hour	58,000 Hrs	\$6.42
	\$0.272 per On Demand Linux r5a.xlarge Instance Hour	44,001 Hrs	\$4.17
	\$0.544 per On Demand Linux r5a.2xlarge Instance Hour	15,338 Hrs	\$58.48
	EBS		\$7.52
	\$0.00 for 1166 Mbps per r5a.2xlarge instance-hour (or partial hour)	107,497 Hrs	\$0.00
	\$0.00 for 800 Mbps per r5a.xlarge instance-hour (or partial hour)	15,338 Hrs	\$0.00
	\$0.00 per GB-month of General Purpose (SSD) provisioned storage under monthly free tier	30,000 GB-Mo	\$0.00
	\$0.00 per GB-Month of snapshot data stored under monthly free tier	1,000 GB-Mo	\$0.00
	\$0.05 per GB-Month of snapshot data stored - Asia Pacific (Singapore)	69,326 GB-Mo	\$3.47
	\$0.12 per GB-month of General Purpose SSD (gp2) provisioned storage - Asia Pacific (Singapore)	33,769 GB-Mo	\$4.05
	Key Management Service		\$0.00
	Lambda		\$0.00
	Route 53		\$0.00
	Simple Notification Service		\$0.00



## 10). Screenshot of Budgets Overview (follow instructions from Lab 5)

The screenshot displays the AWS Budgets Overview page. The left sidebar contains navigation links for various AWS services. The main content area shows the 'Overview' section for budgets. A table lists the budgets, with one budget named 'EE3801' shown. The table includes columns for Name, Thresholds, Budget, Amount used, Forecasted amount, Current vs. budgeted, and Forecasted vs. budgeted. The 'Current vs. budgeted' column shows a progress bar and the percentage 31.77%.

Name	Thresholds	Budget	Amount used	Forecasted amount	Current vs. budgeted	Forecasted vs. budgeted
EE3801	OK	\$400.00	\$127.07		31.77%	