

2.a

```
import sys
import datetime
import entries
# import dicts

def read_log():
    logs = []
    for line in sys.stdin:
        try:
            kr = line.split('\t')
            kr = kr[:10] + [kr[14]]
            kr[3] = int(kr[3])
            kr[5] = int(kr[5])
            kr[6] = int(kr[6])
            kr[0] = datetime.datetime(1970, 1, 1) + datetime.timedelta(seconds=float(kr[0]))
            logs.append(tuple(kr))
        except Exception as e:
            print(e)
            continue
    return logs

if __name__ == '__main__':
    logs = read_log()
    print(logs)
```

```
192.168.22.102, /private/, '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 930000), 'CoulGRQzVqvt3bFEJH', '192.168.202.110', 50766, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/private/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 940000), 'CYvcc1fznVf9bqtda', '192.168.202.110', 50767, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/protected/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 940000), 'CWN753n19SUZAPu8', '192.168.202.110', 50769, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/secret/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 950000), 'CvXv8p8mE9v0b1007', '192.168.202.110', 50770, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/secure/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 950000), 'CpN4u93SEnnv3skcl', '192.168.202.110', 50771, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/secured/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 950000), 'C7fAaj3ngyxw1FM7dL', '192.168.202.110', 50772, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/siteadmin/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 960000), 'Chob55W0XGAPnn8N7', '192.168.202.110', 50773, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/sites/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 960000), 'CENTMY26zidh13kyab', '192.168.202.110', 50774, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/ssl/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 970000), 'C1w6d33nQbktTurdr', '192.168.202.110', 50775, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/ssl/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 970000), 'C03wR8s8llouwPpc', '192.168.202.110', 50776, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/sslkeys/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 970000), 'C1wAN34uylyVwNF9ib', '192.168.202.110', 50777, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/stat/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 980000), 'C6jyT83pb5gR3z7hf', '192.168.202.110', 50778, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/statistic/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 980000), 'CVAg23JR7etlyFAND1', '192.168.202.110', 50779, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/statistics/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 990000), 'C1LH0bAPVko8tpvne', '192.168.202.110', 50780, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/stats/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 990000), 'CMBDD4Peb7z2gfrg', '192.168.202.110', 50781, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/stats_old/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 990000), 'CP1U01tnRMC3Gvta', '192.168.202.110', 54969, '192.168.22.252', 80, 1, 'GET', '192.168.22.252', '/personal_pages/', '200'), (datetime.datetime(2012, 3, 16, 14, 35, 37, 990000), 'C20Vq4wK8MvN8rXN', '192.168.202.110', 50782, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/sys/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38), 'C447Pw3QA2qplJgdbc', '192.168.202.110', 50783, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/sysadmin/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38), 'C2oBNN1niMDV1yp52', '192.168.202.110', 50785, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/sysbackup/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 100000), 'C1KLT72wK2DMwYV65', '192.168.202.110', 50786, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/test/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 100000), 'CLgwcX3upLFC5R43g', '192.168.202.110', 50787, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/testing/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 200000), 'C0LzMN4VhNMKEdpud', '192.168.202.110', 50788, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/tests/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 200000), 'CTKxnb4NLLWj0sc2de', '192.168.202.110', 50789, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/tmp/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 200000), 'CB8PZy4tPY4ymEufu', '192.168.202.110', 50790, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/userdb/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 300000), 'C3BAKe1B4tTjYd601', '192.168.202.110', 50791, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/users/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 300000), 'C0Mqrc1PL5mX0fA1', '192.168.202.110', 50792, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/ustats/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 400000), 'C1jsv01ubNPNBE0xh2', '192.168.202.110', 50793, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/web_usage/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 400000), 'Cebobuh5mdRS9QJPF', '192.168.202.110', 50794, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/webaccess/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 400000), 'CczcdK3MXtdjuzh9b', '192.168.202.110', 50795, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/webadmin/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 500000), 'C2ckya2LSOVV83d13', '192.168.202.110', 50796, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/webalizer/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38), 'CTCUMF2AU1Jdzmnx24', '192.168.202.110', 54985, '192.168.22.252', 80, 1, 'GET', '192.168.22.252', '/from/', '200'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 500000), 'C2hip1E3Au5V0p9', '192.168.202.110', 50797, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/webstat/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 600000), 'CTH0Z1eG0u0R5K24', '192.168.202.110', 50798, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/webstats/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 600000), 'C5TDm1F2VUvUPHF', '192.168.202.110', 50800, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/webtrends/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 700000), 'C0yqEV98E2qb5HF2', '192.168.202.110', 50801, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/wstats/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 700000), 'Cnq5wH1V6Wz0hMew1', '192.168.202.110', 50802, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/wusage/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 700000), 'Crxnb4uqxvpxWz0b', '192.168.202.110', 50803, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/wwwlog/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 800000), 'C861d1ZAJQWQPVBCb4', '192.168.202.110', 50804, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/wwwstat/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 800000), 'CMFLNe3RZxw3Q5sll', '192.168.202.112', 57144, '192.168.23.101', 80, 2, 'GET', '192.168.23.101', '/static/', '404'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 800000), 'CLBC9R1y0MDV5esW3', '192.168.202.110', 50805, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/wwwstats/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 900000), 'C2RKCV1OLCS0xbVJ3', '192.168.202.110', 50806, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/-stats/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 900000), 'CvxhC02E90asbVw', '192.168.202.110', 50807, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/webstats/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 900000), 'C0gtW85oc0x2u3', '192.168.202.110', 50808, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/mp3/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 1000000), 'C1rIXh2VRE10tkfD94', '192.168.202.110', 50809, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/mp3s/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 1000000), 'C2WJ9E3N8C0merGob', '192.168.202.110', 50810, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/1/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 1100000), 'C0QLX1dopl9Xu21h3', '192.168.202.110', 50811, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/10/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 600000), 'CmRzY3w7E29UBAkc', '192.168.202.110', 55000, '192.168.22.252', 80, 1, 'GET', '192.168.22.252', '/Rremote/', '200'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 1100000), 'C4u0416VX60', '192.168.202.110', 50812, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/2/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 1200000), 'C3457mlycawXNKEC', '192.168.202.110', 50813, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/3/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 1200000), 'CpGTZ46Vl8BE9JHe', '192.168.202.110', 50815, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/4/', '400'), (datetime.datetime(2012, 3, 16, 14, 35, 38, 1300000), 'CebghD43zh78gr3943', '192.168.202.110', 50816, '192.168.22.102', 3128, 1, 'GET', '192.168.22.102', '/5/', '400'))
```

2b

```
def sort_log(log, index):

    try:
        return sorted(log, key=lambda x: x[index])
    except:
        raise Exception("niepoprawny index!")
```

```

if __name__ == '__main__':
    logs = read_log()
    print(lib.sort_log(logs,10)[:2])
    print('\n\n')
    print(lib.sort_log(logs,3)[:2])
    print('\n\n')
    print(lib.sort_log(logs,4)[:2])

```

```

kac@kla:~/studia/python_syf/jezyki-skryptowe/13$ cat http_first_100k.log | python3 z2_a.py
[(datetime.datetime(2012, 3, 16, 12, 30, 3, 400000), 'CHSpWz3r7kRm1QP2i', '192.168.202.79', 50847, '192.168.229.251', 80, 1, 'GET', '192.168.229.251', '/cwhp/auditLog.do?file=.....Program FilesC
SCOpXlibclasspathconscisco', '-'), (datetime.datetime(2012, 3, 16, 12, 50, 19, 350000), 'CQSQrb32gnCXyrlmccg', '192.168.202.79', 55025, '192.168.229.101', 80, 1, 'GET', '192.168.229.101', 'index.html?..\\..
\\..\\..\\..\\boot.ini', '-')]

[(datetime.datetime(2012, 3, 16, 13, 7, 11, 900000), 'C8PjL3uI0ztxi19l9', '192.168.202.102', 1025, '192.168.22.203', 80, 1, 'GET', '192.168.22.203', '/readmore.php?config[\\\"sipssys\\\"]=@RFIURL', '404'),
(datetime.datetime(2012, 3, 16, 13, 8, 48, 550000), 'CRQDUz3CKNgLhR71pg', '192.168.202.102', 1025, '192.168.22.203', 80, 1, 'GET', '192.168.22.203', '/cgis/showuser.cgi', '404')]

[(datetime.datetime(2012, 3, 16, 13, 7, 17, 430000), 'CNvJPr2n5uXNVUybd3', '192.168.202.87', 33345, '192.168.201.2', 80, 1, 'GET', '192.168.201.2', '/', '200'), (datetime.datetime(2012, 3, 16, 13, 7, 17,
900000), 'CNemJV2kI4TGEQm1sf', '192.168.202.87', 33346, '192.168.201.2', 80, 1, 'GET', '192.168.201.2', '/css/smoothness/jquery-ui.css', '200')]

```

2.c

```

def get_entries_by_addr(list, addr):
    logs_with_ip = []
    for kr in list:
        if kr[2] == addr:
            logs_with_ip.append(kr)
    return logs_with_ip

```

```

if __name__ == '__main__':
    logs = read_log()
    print(entries.get_entries_by_addr(logs, '192.168.202.79')[:2])
    print('\n\n')
    print(entries.get_entries_by_addr(logs, '192.168.202.87')[:2])
    print('\n\n')
    print(entries.get_entries_by_addr(logs, '192.168.202.102')[:2])

```

```

kac@kla:~/studia/python_syf/jezyki-skryptowe/13$ cat http_first_100k.log | python3 z2_a.py
[(datetime.datetime(2012, 3, 16, 12, 30, 3, 400000), 'CHSpWz3r7kRm1QP2i', '192.168.202.79', 50847, '192.168.229.251', 80, 1, 'HEAD', '192.168.229.251', '/DEASLog02.nsf', '404'), (datetime.datetime(2012, 3, 16, 12,
30, 0, 100000), 'CKnDAPzehlVhRptXl', '192.168.202.79', 50467, '192.168.229.251', 80, 1, 'HEAD', '192.168.229.251', '/DEASLog03.nsf', '404')]

[(datetime.datetime(2012, 3, 16, 13, 7, 17, 430000), 'CNvJPr2n5uXNVUybd3', '192.168.202.87', 33345, '192.168.201.2', 80, 1, 'GET', '192.168.201.2', '/', '200'), (datetime.datetime(2012, 3, 16, 13, 7, 17,
900000), 'CNemJV2kI4TGEQm1sf', '192.168.202.87', 33346, '192.168.201.2', 80, 1, 'GET', '192.168.201.2', '/css/smoothness/jquery-ui.css', '200')]

[(datetime.datetime(2012, 3, 16, 13, 2, 4, 740000), 'CV9EwFIZIHKEj1uRb0', '192.168.202.102', 2525, '192.168.21.102', 80, 1, 'RPC_CONNECT', '-', '192.168.21.102:593', '400'), (datetime.datetime(2012, 3, 16,
13, 2, 57, 400000), 'CYJA4G3fjuUpzrjW4d', '192.168.202.102', 3580, '192.168.22.203', 80, 1, 'GET', '192.168.22.203', '/', '200')]

```

2d

```
def get_entries_by_code(list, code):
    logs_with_code = []
    for kr in list:
        if kr[10] == code:
            logs_with_code.append(kr)
    return logs_with_code
```

```
if __name__ == '__main__':
    logs = read_log()
    print(entries.get_entries_by_code(logs, '404')[:2])
    print('\n\n')
    print(entries.get_entries_by_code(logs, '200')[:2])
    print('\n\n')
    print(entries.get_entries_by_addr(logs, '100')[:2])
```

```
kac@kila:~/studies/python_3/for_cryptography/1$ cat http_first_100k.log | python3 z2_a.py
[[datetime.datetime(2012, 3, 16, 12, 30), 'CHET7z3AzG4gyCNgcl', '192.168.202.79', 50465, '192.168.229.251', 80, 1, 'HEAD', '192.168.229.251', '/DEASLog02.nsf', '404'), (datetime.datetime(2012, 3, 16, 12, 30, 0, 100000), 'CKnDap2ohlVnRplXl', '192.168.202.79', 50467, '192.168.229.251', 80, 1, 'HEAD', '192.168.229.251', '/DEASLog03.nsf', '404')]

[[datetime.datetime(2012, 3, 16, 12, 30, 1, 880000), 'Cndg082p0B0QNScWrd', '192.168.202.79', 50731, '192.168.229.251', 80, 1, 'GET', '192.168.229.251', '/', '200'), (datetime.datetime(2012, 3, 16, 12, 30, 2, 190000), 'C3HQwDKlVh9W5Fq4', '192.168.202.79', 50766, '192.168.229.251', 80, 1, 'GET', '192.168.229.251', '/_vti_bin/_vti_aut/author.dll', '200')]
```

2e

```
def get_failed_reads(list, together=False):
    list_4 = []
    list_5 = []
    for kr in list:
        try:
            if kr[10][0] == '4':
                list_4.append(kr)
            if kr[10][0] == '5':
                if together:
                    list_4.append(kr)
                else:
                    list_5.append(kr)
        except:
            continue
    if together:
        return list_4
    else:
        return list_4, list_5
```

```

if __name__ == '__main__':
    logs = read_log()
    print(entries.get_failed_reads(logs, True)[:3])
    print('\n\n')
    print(entries.get_failed_reads(logs, False)[1][:2])
    print('\n\n')

```

```

[(datetime.datetime(2012, 3, 16, 12, 30), 'CHet7z3AzG4yCNgcl', '192.168.202.79', 50465, '192.168.229.251', 80, 1, 'HEAD', '192.168.229.251', '/DEASLog02.nsf', '404'), (datetime.datetime(2012, 3, 16, 12, 30, 0, 10000), 'CKnDapZohlvNsrp1x1', '192.168.202.79', 50467, '192.168.229.251', 80, 1, 'HEAD', '192.168.229.251', '/DEASLog03.nsf', '404'), (datetime.datetime(2012, 3, 16, 12, 30, 0, 30000), 'CNTrjn42F3L85BMZh6', '192.168.202.79', 50469, '192.168.229.251', 80, 1, 'HEAD', '192.168.229.251', '/DEASLog04.nsf', '404')]

[(datetime.datetime(2012, 3, 16, 12, 30, 2, 170000), 'CK04DM24V1bv5eJEHb', '192.168.202.79', 50762, '192.168.229.251', 80, 1, 'GET', '192.168.229.251', '/vtl_pvt/', '500'), (datetime.datetime(2012, 3, 16, 12, 30, 3), 'CjYHynRZDEKYQowZ8', '192.168.202.79', 50784, '192.168.229.251', 80, 1, 'GET', '192.168.229.251', '/vtl_pvt/x_todo.htm', '500')]

```

2f

```

def get_entires_by_extension(log_list, extens):
    logs_with_ext = []
    for kr in log_list:
        if str(kr[9]).endswith(extens):
            logs_with_ext.append(kr)
    return logs_with_ext

```

```

if __name__ == '__main__':
    logs = read_log()
    print(entries.get_entires_by_extension(logs, 'jpg')[:2])
    print('\n\n')
    print(entries.get_entires_by_extension(logs, 'png')[:2])
    print('\n\n')
    print(entries.get_entires_by_extension(logs, 'html')[:2])

```

```

[(datetime.datetime(2012, 3, 16, 12, 30, 1, 100000), 'C34nl81pFcSxiQA505', '192.168.202.79', 50642, '192.168.229.251', 80, 1, 'HEAD', '192.168.229.251', '/PublishingImages/NewsArticleImage.jpg', '404'), (datetime.datetime(2012, 3, 16, 12, 30, 1, 810000), 'CvWb171Jxylly0qys', '192.168.202.79', 50721, '192.168.229.251', 80, 1, 'HEAD', '192.168.229.251', '/images/outlook.jpg', '404')]

[(datetime.datetime(2012, 3, 16, 12, 46, 830000), 'CA6Cbr1PscLYW5n92', '192.168.202.79', 33597, '192.168.229.251', 5488, 1, 'GET', '192.168.229.251', '/lng/cake.lcon.png', '404'), (datetime.datetime(2012, 3, 16, 12, 46, 51, 940000), 'CU4HdK2KT408x20kz4', '192.168.202.79', 40242, '192.168.229.156', 80, 1, 'GET', '192.168.229.156', '/lng/cake.lcon.png', '404')]

[(datetime.datetime(2012, 3, 16, 12, 30, 1, 890000), 'CpYjFE1rpn2zgND56', '192.168.202.79', 50733, '192.168.229.251', 80, 1, 'HEAD', '192.168.229.251', '/HM_logo.html', '404'), (datetime.datetime(2012, 3, 16, 12, 46, 52, 20000), 'CA516h3UCJLKDa093e', '192.168.202.79', 38825, '192.168.229.153', 5357, 1, 'HEAD', '192.168.229.153', '/globalSIPsettings.html', '503')]

```

3a

```
def entry_to_dict(entry):
    keys = [
        'ts',
        'uid',
        'id.orig_h',
        'id.orig_p',
        'id.resp_h',
        'id.resp_p',
        'trans_depth',
        'method',
        'host',
        'uri',
        'status_code',
    ]
    return dict(zip(keys, entry))
```

```
if __name__ == '__main__':
    logs = read_log()
    print(dict(entry_to_dict(logs[1])))
    print('\n\n')
    print(dict(entry_to_dict(logs[2])))
    print('\n\n')
    print(dict(entry_to_dict(logs[3])))
```

```
{'ts': datetime.datetime(2012, 3, 16, 12, 30, 0, 10000), 'uid': 'CKnDap2ohlVW6rptXl', 'id.orig_h': '192.168.202.79', 'id.orig_p': 50467, 'id.resp_h': '192.168.229.251', 'id.resp_p': 80, 'trans_depth': 1, 'method': 'HEAD', 'host': '192.168.229.251', 'uri': '/DEASLog03.nsf', 'status_code': '404'}

{'ts': datetime.datetime(2012, 3, 16, 12, 30, 0, 30000), 'uid': 'CNTrjn42F3LB58MZH6', 'id.orig_h': '192.168.202.79', 'id.orig_p': 50469, 'id.resp_h': '192.168.229.251', 'id.resp_p': 80, 'trans_depth': 1, 'method': 'HEAD', 'host': '192.168.229.251', 'uri': '/DEASLog04.nsf', 'status_code': '404'}

{'ts': datetime.datetime(2012, 3, 16, 12, 30, 0, 40000), 'uid': 'C1D7mK1PlzKEEyG03', 'id.orig_h': '192.168.202.79', 'id.orig_p': 50471, 'id.resp_h': '192.168.229.251', 'id.resp_p': 80, 'trans_depth': 1, 'method': 'HEAD', 'host': '192.168.229.251', 'uri': '/DEASLog05.nsf', 'status_code': '404'}
KeyError: 'uri'
KeyError: 'uri'
```

```
return dict(zip(keys, entry))

def log_to_dict(log):
    result = defaultdict(list)

    for entry in log:
        entry = entry_to_dict(entry)
        result[entry['uid']].append(entry)

    return result
```



```

if __name__ == '__main__':
    logs = read_log()
    log_dict = dicts.log_to_dict(logs)
    for i, (key, value) in enumerate(log_dict.items()):
        if i >= 3:
            break
        print(key, value)

```

```

$ cat http-first-log.log | python3 2a.py
CHET7z3AzC4gyCNgcl [{"ts": datetime.datetime(2012, 3, 16, 12, 30), "uid": "CHET7z3AzC4gyCNgcl", "id.orig_h": "192.168.202.79", "id.orig_p": 50465, "id.resp_h": "192.168.229.251", "id.resp_p": 80, "trans_depth": 1, "method": "HEAD", "host": "192.168.229.251", "uri": "/DEASLog02.nsf", "status_code": "404"}]
CKnDAPzohlVNrplXL [{"ts": datetime.datetime(2012, 3, 16, 12, 30, 0, 10000), "uid": "CKnDAPzohlVNrplXL", "id.orig_h": "192.168.202.79", "id.orig_p": 50467, "id.resp_h": "192.168.229.251", "id.resp_p": 80, "trans_depth": 1, "method": "HEAD", "host": "192.168.229.251", "uri": "/DEASLog03.nsf", "status_code": "404"}]
GNTFjn42F3LB50WZHo [{"ts": datetime.datetime(2012, 3, 16, 12, 30, 0, 30000), "uid": "GNTFjn42F3LB50WZHo", "id.orig_h": "192.168.202.79", "id.orig_p": 50469, "id.resp_h": "192.168.229.251", "id.resp_p": 80, "trans_depth": 1, "method": "HEAD", "host": "192.168.229.251", "uri": "/DEASLog04.nsf", "status_code": "404"}]

```

3c

```

def print_dict_entry_dates(dict_log):
    from lib import sort_log

    method_dict = defaultdict(lambda: 0)
    host_dict = defaultdict(lambda: 0)
    code_dict = {
        '2xx' : 0,
        'other' : 0,
    }

    for k, v in dict_log.items():
        print(k)

        num_queries = 0
        for dict_entry in v:
            print(dict_entry['host'], dict_entry['uri'])

            method_dict[dict_entry['method']] += 1
            host_dict[dict_entry['host']] += 1

            code = dict_entry['referrer']
            index = '2xx' if (code[0]=='2' and len(code)==3) else 'other'
            code_dict[index] += 1

            num_queries += 1

        sorted_by_date = sort_log(v, 'ts')
        print(f'number of queries: {num_queries}')
        print(f'first: {sorted_by_date[0]["ts"]} \nlast: {sorted_by_date[-1]["ts"]}')
        print()

    method_sum = sum(method_dict.values())
    for k, v in method_dict.items():
        print(f'{k}: {round(v/method_sum * 100, 5)}%')

    print("\nHOSTS:")
    for k, v in host_dict.items():
        print(f'{k}: {v}')

    code_sum = sum(code_dict.values())
    print(f"\n2xx/other: {code_dict['2xx'] / code_sum}")

```

```

if __name__ == '__main__':
    logs = read_log()
    log_dict = dicts.log_to_dict(logs)
    print(dicts.print_dict_entry_dates(log_dict))
    # print(dicts.entry_to_dict(logs[2]))

```

```

CnFE011W4xNyWLL45a
192.168.22.252 /.cobalt/
number of queries: 1
first: 2012-03-16 14:34:54.160000
last: 2012-03-16 14:34:54.160000

```

```

CNJNVrNwEgSvhA1D6
192.168.22.253 /manual/ko/vhosts
number of queries: 1
first: 2012-03-16 14:34:54.210000
last: 2012-03-16 14:34:54.210000

```

```

last: 2012-03-16 14:33:38.130000

```

```

HEAD: 4.732%
GET: 91.763%
POST: 2.322%
OPTIONS: 0.879%
TRACE: 0.012%
PROPFIND: 0.028%
RPC_CONNECT: 0.034%
-: 0.056%
DELETE: 0.002%
PUT: 0.007%
SEARCH: 0.025%
DESCRIBE: 0.004%
CONNECT: 0.051%
GNUTELLA: 0.028%
Secure: 0.014%
OEDNGQ: 0.001%
YVFUKU: 0.001%
some: 0.014%
BXNTPG: 0.001%
XORXZY: 0.001%
user: 0.001%
NVKHY: 0.001%
PCKOIZ: 0.001%
TRACK: 0.007%
NESSUS: 0.007%
EAILCX: 0.001%
KTGFFX: 0.001%
FHGDMH: 0.001%
WOIGAG: 0.001%
EQAONR: 0.001%
GATMQW: 0.001%
JZUIPY: 0.001%
UIZUPR: 0.001%

```

```
2xx/other: 0.1302
```

[illegible]