

Lee Brunovsky

CSCI 6910 Cloud Computing and Security

CH3 *Cloud Services & Platforms*, **CH6** *Python Basics*: Lab Exercises

HW2

Due: Jun 30, 2021

Submitted: Jun 29, 2021

CH3Q1:

aws Services Search for services, features, marketplace products, and docs [Alt+S]

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 7: Review Instance Launch

AMI Details

Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-00399ec92321828f5

Free tier eligible

Ubuntu Server 20.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).
Root Device Type: ebs Virtualization type: hvm

Instance Type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

Security Groups

Security group name: launch-wizard-1
Description: launch-wizard-1 created 2021-06-27T20:44:52.493+09:00

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	0.0.0.0/0	
HTTP	TCP	80	0.0.0.0/0	

Instance ID	Instance state	Instance type	Status	Alarm	Availability	Public IPv4 DNS	Public IPv4
i-01648b51364712f...	Running	t2.micro	Initial	No	us-east-2c	ec2-18-218-110-201.us-east-2.compute.amazonaws...	18.218.110.201

```
PS C:\Users\leebr> ssh -i "C:\Users\leebr\Desktop\http.pem" ubuntu@ec2-18-218-110-201.us-east-2.compute.amazonaws.com
Welcome to Ubuntu 20.04.2 LTS (GNU/Linux 5.4.0-1045-aws x86_64)Welcome to Ubuntu 20.04.2 LTS (GNU/Linux 5.4.0-1045-aws x86_64)
```

```
System information as of Sun Jun 27 11:54:14 UTC 2021
```

```
System load: 0.0          Processes:            100
Usage of /:  16.4% of 7.69GB Users logged in:        0
Memory usage: 23%         IPv4 address for eth0: 172.31.35.147
Swap usage:  0%
```

```
ubuntu@ip-172-31-35-147:~$ sudo apt-get update
```

```
ubuntu@ip-172-31-35-147:~$ sudo apt-get install apache2
```

```
ubuntu@ip-172-31-35-147:~$ cd /var/www/html
```

```
ubuntu@ip-172-31-35-147:/var/www/html$ sudo vim index.html
```

```
i- <!doctype html><html><body><h1>HW2CH3Q1 Web Page</h1></body></html>' esc :wq
```

```
ubuntu@ip-172-31-35-147:/var/www/html$ sudo /etc/init.d/apache2 restart
Restarting apache2 (via systemctl): apache2.service.
```

AWS Management Console | Instance details | EC2 Man | ec2-18-218-110-201.us-e...

Not secure | http://ec2-18-218-110-201.us-east-2.compute.amazonaws.com

Apps | GSW Mail - Lee Bru... | gview | OverAPI.com | The Java® Languag... | RA

HW2CH3Q1 Web Page

Instance summary for i-01648b51364712fb3 [Info](#)

Updated less than a minute ago

Instance ID

i-01648b51364712fb3

Instance state

Running

Instance type

t2.micro

Public IPv4 address

3.15.96.135 | [open address](#)

Public IPv4 DNS

ec2-3-15-96-135.us-east-2.compute.amazonaws.com | [open address](#)

Elastic IP addresses

3.15.96.135 [Public IP]

← → ↺

Not secure | http://3.15.96.135

Apps

GSW Mail - Lee Bru...

gview

HW2CH3Q1 Web Page

CH3Q2:

Google Cloud Platform

HW2CH3Q2

Search products and resources

Compute Engine

Virtual machines

Marketplace

Release Notes

VM instances

CREATE INSTANCE

IMPORT VM

REFRESH

INSTANCES

INSTANCE SCHEDULE

Filter

Enter property name or value

Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	SSH
Running	instance-1	us-central1-a			10.128.0.2 (nic0)	104.198.68.231	

leebrunovsky@gmail.com

Privacy

Google Account

Add account

Sign out

CLOUD SHELL

Terminal

(hw2ch3q2-318103)

Open Editor

```

Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to hw2ch3q2-318103.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
leebrunovsky@cloudshell:~ (hw2ch3q2-318103) $ gcloud config list project
[core]
project = hw2ch3q2-318103
Your active configuration is: [cloudshell-27850]

```

gcloud beta compute --project=hw2ch3q2 instances create instance-1 --zone=us-central1-a --machine-type=f1-micro --subnet=default --network-tier=PREMIUM --maintenance-policy=MIGRATE --service-

★ **Note:** If you have previously installed the [Google Cloud SDK](#) or if you are using a [Google Compute Engine](#) instance, then you already have gsutil installed.

gcloud beta compute ssh --zone "us-central1-a" "instance-1" --project "hw2ch3q2-318103"

```
leebrunovsky@cloudshell:~ (hw2ch3q2-318103)$ gcloud beta compute ssh --zone "us-central1-a" "instance-1" --project "hw2ch3q2-318103"
Updating project ssh metadata...Updated [https://www.googleapis.com/compute/beta/projects/hw2ch3q2-318103].
Updating project ssh metadata...done.
Waiting for SSH key to propagate.
Warning: Permanently added 'compute.6680714236466450858' (ECDSA) to the list of known hosts.
Enter passphrase for key '/home/leebrunovsky/.ssh/google_compute_engine':
Enter passphrase for key '/home/leebrunovsky/.ssh/google_compute_engine':
[leebrunovsky@instance-1 ~]$
```

gcloud compute --project=hw2ch3q2-318103 firewall-rules create hw2ch3q2-http-port80 --
direction=INGRESS --priority=1000 --network=default --action=ALLOW --rules=tcp:80 --source-
ranges=0.0.0.0/0 --target-tags=http-server

```
Creating firewall...Created [https://www.googleapis.com/compute/v1/projects/hw2ch3q2-318103/firewallRules/hw2ch3q2-http-port80]
Creating firewall...done.
NAME                                NETWORK DIRECTION PRIORITY ALLOW DENY DISABLED
hw2ch3q2-http-port80               default INGRESS    1000    tcp:80          False
[leebrunovsky@instance-1 ~]$
```

sudo yum update httpd

```
[leebrunovsky@instance-1 ~]$ sudo yum update httpd
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.dal.nexril.net
 * epel: ftp.cse.buffalo.edu
 * extras: centos.mirrors.hoobly.com
 * updates: mirror.team-cymru.com
Package(s) httpd available, but not installed.
No packages marked for update
```

sudo yum install httpd

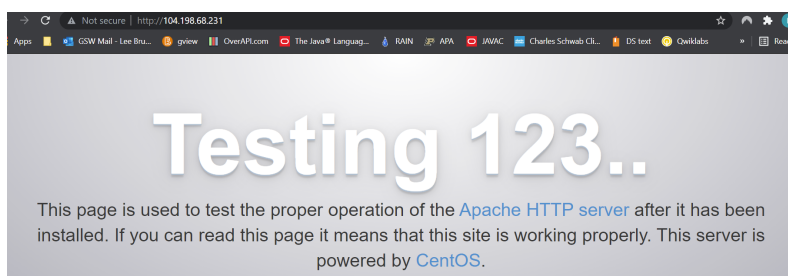
```
Installed:
  httpd.x86_64 0:2.4.6-97.el7.centos

Dependency Installed:
  apr.x86_64 0:1.4.8-7.el7          apr-util.x86_64 0:1.5.2-6.el7          httpd-tools.x86_64 0:2.4.6-97.el7.centos          mailcap.noarch 0:2.1.41-2.el7
Complete!
```

sudo systemctl start httpd

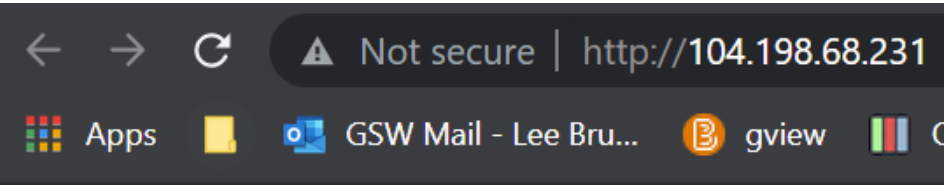
sudo systemctl status httpd

```
[leebrunovsky@instance-1 ~]$ sudo systemctl start httpd
[leebrunovsky@instance-1 ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor preset: disabled)
   Active: active (running) since Sun 2021-06-27 04:21:25 UTC; 32s ago
     Docs: man:httpd(8)
           man:apachectl(8)
  Main PID: 1281 (httpd)
    Status: "Total requests: 0; Current requests/sec: 0; Current traffic: 0 B/sec"
    CGroup: /system.slice/httpd.service
```



echo '<!doctype html><html><body><h1>HW2CH3Q2 Web Page</h1></body></html>' | sudo tee /var/www/html/index.html

```
[leebrunovsky@instance-1 ~]$ echo '<!doctype html><html><body><h1>HW2CH3Q2 Web Page</h1></body></html>' | sudo tee /var/www/html/index.html
<!doctype html><html><body><h1>HW2CH3Q2 Web Page</h1></body></html>
```



HW2CH3Q2 Web Page

CH3Q4:

Name

DNS name

State

VPC ID

Availability Zones

Type

Created At

HW2CH3Q4

HW2CH3Q4-2069285307.us-east-2.elb.amazonaws.com

vpc-e3069c88

us-east-2c, us-east-2b, ...

classic

June 27, 2021 at 10:40:53 P...

Load balancer: HW2CH3Q4

Description

Instances

Health check

Listeners

Monitoring

Tags

Migration

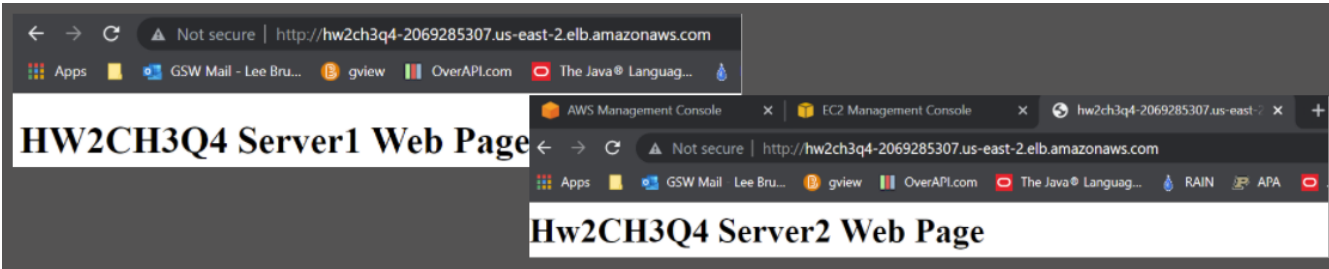
Connection Draining: Enabled, 300 seconds [\(Edit\)](#)

Edit Instances

Instance ID	Name	Availability Zone	Status	Actions
i-0a71fb58cee2772d9		us-east-2b	InService ⓘ	Remove from Load Balancer
i-01648b51364712fb3		us-east-2c	InService ⓘ	Remove from Load Balancer

Basic Configuration

Name	HW2CH3Q4	Creation time	June 27, 2021 at 10:40:53 PM UTC+9
* DNS name	HW2CH3Q4-2069285307.us-east-2.elb.amazonaws.com (A Record)	Hosted zone	Z3AADJGX6KTTL2
Type	Classic (Migrate Now)	Status	2 of 2 instances in service
Scheme	internet-facing	VPC	vpc-e3069c88
Availability Zones	subnet-44ff0439 - us-east-2b, subnet-4cedce00 - us-east-2c, subnet-f1cb469a - us-east-2a		



CH3Q5:

Search for services, features, marketplace products, and docs

[Alt+S]

LeeBrunovsky GSW

Ohio

Support

Successfully created database [hw2ch3q5-db](#)

View connection details

RDS > Databases > hw2ch3q5-db

hw2ch3q5-db

Modify

Actions

Summary

DB identifier	CPU	Status	Class
hw2ch3q5-db	-	Available	db.t2.micro
Role	Current activity	Engine	Region & AZ
Instance		MySQL Community	us-east-2a

Connectivity & security

Monitoring

Logs & events

Configuration

Maintenance & backups

Tags

Connectivity & security

Endpoint & port

Endpoint

hw2ch3q5-db.cjxcshykjsdh.us-east-2.rds.amazonaws.com

Port

3306

Networking

Availability zone

us-east-2a

VPC

vpc-e3069c88

Subnet group

Security

VPC security groups

default (sg-f179e7b8)

(active)

Public accessibility

Yes

VPC > Security Groups > sg-059dc7f6136414184 - HW2CH3Q5

sg-059dc7f6136414184 - HW2CH3Q5

Actions

Details

Security group name	Security group ID	Description	VPC ID
HW2CH3Q5	sg-059dc7f6136414184	allow port 3306	vpc-e3069c88

Inbound rules (3)

Edit inbound rules

Type	Protocol	Port range	Source	Description - optional
All traffic	All	All	0.0.0.0/0	-
MySQL/Aurora	TCP	3306	0.0.0.0/0	-
MySQL/Aurora	TCP	3306	::/0	-

Security group

List of DB security groups to associate with this DB instance.

Choose security groups

HW2CH3Q5

mysql -h hw2ch3q5-db.cjxcshykjsdh.us-east-2.rds.amazonaws.com -P 3306 -u admin -p

```
[cloudshell-user@ip-10-0-176-214 ~]$ mysql -h hw2ch3q5-db.cjxcshykjsdh.us-east-2.rds.amazonaws.com -P 3306 -u admin -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 29
Server version: 8.0.20 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
```

```
MySQL [(none)]> CREATE DATABASE hw2ch3q5;  
Query OK, 1 row affected (0.00 sec)
```

```
MySQL [(none)]> USE hw2ch3q5  
Database changed
```

```
MySQL [hw2ch3q5]> CREATE TABLE users(  
-> username VARCHAR(100) PRIMARY KEY,  
-> password VARCHAR(100),  
-> firstname VARCHAR(100),  
-> lastname VARCHAR(100)  
-> );  
Query OK, 0 rows affected (0.02 sec)
```

```
');INSERT INTO users VALUES ('testuser','password','test','user');  
Query OK, 1 row affected (0.00 sec)
```

```
MySQL [hw2ch3q5]> SELECT * FROM users;  
+-----+-----+-----+-----+  
| username | password | firstname | lastname |  
+-----+-----+-----+-----+  
| testuser | password | test      | user      |  
+-----+-----+-----+-----+  
1 row in set (0.00 sec)
```

CH3Q7:

```
<!DOCTYPE html>  
<html>  
<head>  
<style>  
body {  
  background-color: lightgrey;  
}  
  
h1 {  
  color: Blue;  
  text-align: left;  
}  
  
p {  
  font-family: verdana;  
  font-size: 20px;  
}  
</style>  
</head>  
<body>  
  
<p>Lee Brunovsky<p>  
<h1>HW2CH3Q7</h1>  
<p>Host a static website from cloud storage with CDN distribution</p>  
<img src ="GSW.jpg" alt="GSW Logo">  
  
</body>  
</html>
```

Destination

s3://hw2ch3q7

Succeeded

🟢 2 files, 48.7 KB (100.00%)

Failed

🔴 0 files, 0 B (0%)

Static website hosting

[Edit](#)

Use this bucket to host a website or redirect requests. [Learn more](#)

Static website hosting

Enabled

Hosting type

Bucket hosting

Bucket website endpoint

When you configure your bucket as a static website, the website is available at the AWS Region-specific website endpoint of the bucket. [Learn more](#)

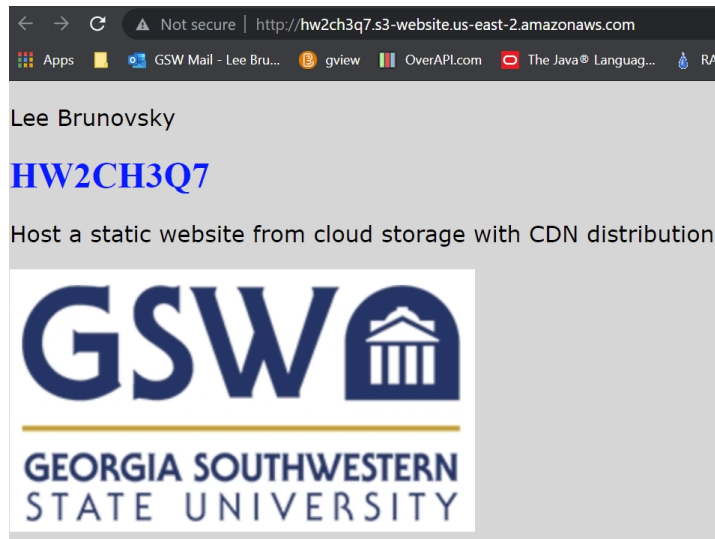
<http://hw2ch3q7.s3-website.us-east-2.amazonaws.com>

Bucket policy

The bucket policy, written in JSON, provides access to the ob
[more](#)

[Edit](#)[Delete](#)

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicReadGetObject",
      "Effect": "Allow",
      "Principal": "*",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::hw2ch3q7/*"
    }
  ]
}
```



hw2ch3q7b2



[Objects](#) [Properties](#) [Permissions](#) [Metrics](#) [Management](#) [Access Points](#)

Objects (2)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

[Refresh](#) [Copy S3 URI](#) [Copy URL](#) [Download](#) [Open](#) [Delete](#) [Actions](#) [Create folder](#) [Upload](#)

Find objects by prefix

<input type="checkbox"/>	Name	Type	Last modified	Size	Storage class
<input type="checkbox"/>	 GSW.jpg	jpg	June 28, 2021, 16:22:31 (UTC+09:00)	48.3 KB	Standard
<input type="checkbox"/>	 HW2CH3Q7.html	html	June 28, 2021, 16:22:32 (UTC+09:00)	387.0 B	Standard

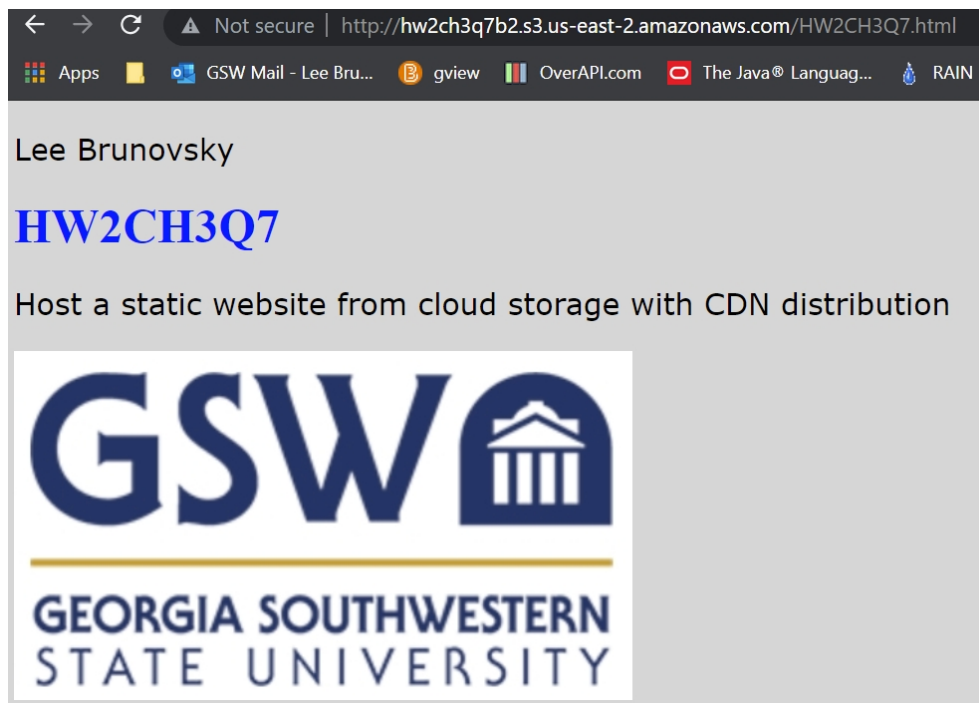
CloudFront Distributions

[Create Distribution](#)[Distribution Settings](#)[Delete](#)[Enable](#)[Disable](#)[Refresh](#) [Settings](#) [Help](#) [User](#)

Viewing: [Any Delivery Method](#) [Any State](#) [Viewing 1 to 1 of 1 Items](#)

<input type="checkbox"/>	Delivery Method	ID	Domain Name	C	Origin	CNAMEs	Status	State	Last Modified
<input type="checkbox"/>	Web	E1LTJ0H5H06FKJ	d1v84uuexwj5za.cloudfront.net	-	hw2ch3q7b2.s3.amazonaws.com	-	Deployed	Enable	2021-06-28 16:22:32

```
<img src ="http://d1v84uuexwj5za.cloudfront.net/GSW.jpg" alt="GSW Logo">
```

*Much faster on the EDGE in bucket 2!

CH6Q1:

Part 1 & 2

```
import sys
```

```
def readFile(filename): # Read file passed to script and return contents
    contents = open(filename).read().lower().split()
    return contents
```

```
def wordCount(contents):
    unique = [] # Set of unique words.
    for word in contents:
        if word not in unique:
            unique.append(word)
```

```
# List of Stop words to exclude from the count
```

```
stopWords = ["i", "me", "my", "myself", "we", "our", "ours", "ourselves",
    "you", "your", "yours", "yourself", "yourselves", "he", "him", "his",
    "himself", "she", "her", "hers", "herself", "it", "its", "itself",
    "they", "them", "their", "theirs", "themselves", "what", "which",
    "who", "whom", "this", "that", "these", "those", "am", "is", "are",
    "was", "were", "be", "been", "being", "have", "has", "had", "having",
    "do", "does", "did", "doing", "a", "an", "the", "and", "but", "if",
    "or", "because", "as", "until", "while", "of", "at", "by", "for",
    "with", "about", "against", "between", "into", "through", "during",
```

```
"before", "after", "above", "below", "to", "from", "up", "down", "in",
"out", "on", "off", "over", "under", "again", "further", "then", "once",
"here", "there", "when", "where", "why", "how", "all", "any", "both",
"each", "few", "more", "most", "other", "some", "such", "no", "nor",
"not", "only", "own", "same", "so", "than", "too", "very", "s", "t",
"can", "will", "just", "don", "should", "now"]
```

```
counts = [] # Set of unique word counts.
for uniWord in unique:
    count = 0
    for word in contents: # Iterate over contents.
        if word not in stopWords: # Check for stop words
            if word == uniWord: # Test if word equal to the current unique word
                count += 1 # Increment count
    counts.append(count)
```

```
wordCountDict = {} # Create Dict of counts / unique to sort
for key, val in zip(unique, counts):
    wordCountDict.setdefault(key, []).append(val)
return wordCountDict
```

```
def topTenWords(wordCountDict):
    wordCountDict_Sorted = sorted(wordCountDict,
        key=wordCountDict.get, reverse=True) #Sort by dict key, descending
    for i in wordCountDict_Sorted[:10]: # Print top 10
        print(i, wordCountDict[i])
```

```
def main():
    filename = sys.argv[1]
    contents = readFile(filename)
    wordCountDict = wordCount(contents)
    topTenWords(wordCountDict)
```

```
if __name__ == '__main__':
    main()
```

Part 3

```
import sys
```

```
def stdIn(userIn):
    phrase = userIn.lower() # Read user input in lower case
    return phrase
```

```
def sentimentScore(stdIn):
    sentimentLexicon = {'confusing': '-2', 'congrats': '2', # Assign lexicon score
        'happy': '5', 'sad': '-5'}
```

```
s = list(stdIn.split(" "))          # Convert phrase string to list

score = 0
for x in s:                          # Iterate over phrase string
    for i in sentimentLexicon.keys(): # Iterate lexicon dict keys for phrase match
        if x == i:
            score += int(sentimentLexicon[i]) # Increment score if match
print('sentiment score: ' + str(score))
```

```
def main():
    userIn = sys.argv[1]
    phrase = stdIn(userIn)
    sentimentScore(phrase)
```

```
if __name__ == '__main__':
    main()
```