RHYMEANALYZER

RHYMESCHEMES

Position of rhymes

End rhymes

Internal rhymes

Perfect Rhymes

Near Rhymes

Assonance Rhymes

Compound Rhymes

Example

His palms are sweaty, knees weak, arms are heavy
There's vomit on his sweater already: Mom's spaghetti
He's nervous but on the surface he looks calm and ready
To drop bombs, but he keeps on forgetting

What he wrote down, the whole crowd goes so loud He opens his mouth, but the words won't come out He's choking how? Everybody's joking now The clock's run out, time's up, over, blaow!

Snap back to reality, oh, there goes gravity
Oh, there goes Rabbit, he choked, he's so mad but he won't
Give up that easy, nope, he won't have it, he knows
His whole back's to these ropes, it don't matter, he's dope
He knows that, but he's broke, he's so stagnant, he knows
When he goes back to this mobile home that's when it's
Back to the lab again, yo! This whole rhapsody

```
import inflect
import <u>pandas</u> as pd
import string
from nltk.tokenize import word_tokenize
from nltk.corpus import stopwords
from nltk.stem.snowball import SnowballStemmer
p = inflect.engine()
RHYME_DICT = {} # global rhyming dict w/ key: word & value: rhymes in lyrics
VOWELS = ['AA1', 'AE1', 'AH1', 'A01', 'AW1', 'AY1', 'EH1', 'ER1',
            'EY1', 'IH1', 'IY1', 'OW1', 'OY1', 'UH1', 'UW1'] # stressed vowel
def txt_Dict():
    filepath = "phodict.txt"
    dict1 = dict()
    with open(filepath) as file1:
        for line in file1:
            words = line.split() # splits line on whitespace
            dict1[words[0]] = tuple(words[1:])
    return dict1
PHODICT = txt_Dict() # phonetic dictionary
def rhyme_generator():
    "Takes user inputted lyrics and stores into list and dictionary"
    lyrics = input("Input lyrics to rhyme scheme analyzer: ")
    BAR_LIST = text_cleaner(lyrics)
    bar_processor(BAR_LIST)
    assonance()
    post_processor()
    df = pd.DataFrame.from_dict(RHYME_DICT, orient='index')
    df.to_excel('output_rhymes.xls', sheet_name = 'Rhymes')
```

```
def text_cleaner(lyrics):
    "Helper function that cleans up lyrics for list and rhyme dictionary"
    tokens = word_tokenize(lyrics)
# converts words to lowercase
    tokens = [element.lower() for element in tokens]
    table = str.maketrans('', '', string.punctuation)
    stripped = [w.translate(table) for w in tokens] # strips punctuation
    BAR_LIST = [word for word in stripped if word.isalpha()] # keep alpha words
    stop_words = set(stopwords.words('english')) # set of words to ignore
    BAR_LIST = [word for word in BAR_LIST if not word in stop_words] # filter
    return BAR_LIST
```

nltk.tokenize: Splits words based on any punctuation and strips punctuation

nltk.corpus: Allows import of stopwords, so can filter out unimportant words like "he," "and," etc.

nltk.stem.snowball: Supports checking if words have the same stem (i.e. run, runs, running), so they may be put into the same rhyme group

nltk: Natural language processing library/module for Python

PHODICT: text file from CMU dictionary where most common words of the English language and their phonetic breakdowns are listed

```
def bar_processor(BAR_LIST):
    "Function iterates through the list and searches each word for its rhymes"
    bar_set = set(BAR_LIST)
    bool_dict = dict.fromkeys(bar_set, False)
    for i in bar_set:
        if (bool_dict[i]): # if visited, skip]
            continue
        intersection = same_stem(i, bool_dict)
        # find intersection bw rhymes & words in bar set
        intersection2 = bar_set.intersection(word_rhymes(BAR_LIST,i))
        intersection3 = dedup(intersection2, bool_dict)
        intersection |= intersection3
        for j in intersection: # mark as True b/c visited now
            bool_dict[j] = True
        list_rhyme = list(intersection)
        RHYME_DICT[i] = list_rhyme
def same_stem(word, bool_dict):
    '''Checks which words have the same stem and place them into the same
    rhyme group'''
    stemmer = SnowballStemmer("english")
    stem = stemmer.stem(word)
    intersection = set()
    intersection = {w for w in bool_dict.keys() if (not bool_dict[w] and
                    (stemmer.stem(w) == stem))}
    return intersection
def word_rhymes(BAR_LIST, word):
    "Calls scraper for perfect and near rhymes of argument word from lyrics"
    perfect_rhymes = rhyme_dataframe(word, 'rhy') # perfect rhymes
    if (len(BAR_LIST) > 500):
        return(perfect_rhymes)
    near_rhymes = rhyme_dataframe(word, 'nry')
    df_rhy = perfect_rhymes | near_rhymes
    return(df_rhy)
def rhyme_dataframe(word, rhyme_type):
    "Scrapes rhymes into pandas df and outputs set"
    base_url = 'https://api.datamuse.com/words?rel_'
    url = base_url + rhyme_type + '=' + word + "&max=50"
    df_rhy = (pd.read_json(url)) # url provides data in json format
    if (df_rhy.empty):
        return(set())
    df_rhy = df_rhy.loc[:, ['word']]['word']
    df_rhy = set(df_rhy.unique())
    return df_rhy
```

```
def dedup(set1, bool_dict):
    "Prevents additioon of duplicate words"
   set2 = {w for w in set1 if (not bool_dict[w])}
   return set2
def assonance():
   "Refines dictionary items by combining assonance rhymes"
   syl_dict = {}
   for i in RHYME_DICT:
       try:
           if (syllableCount(i.upper()) == 1):
                syl_dict[i] = PHODICT[i.upper()]
       except KeyError:
           pass
   for vow in VOWELS:
       vow_list = [word for word in syl_dict.keys() if vow in syl_dict[word]]
       length = len(vow_list)
       vow_set = set()
       for index in range(length):
            word = vow_list[index]
            vow_set |= set(RHYME_DICT[word])
            if (index == length - 1):
                RHYME_DICT[word] = list(vow_set)
                break
           RHYME_DICT.pop(word)
def syllableCount(word):
    "Calculates number of syllables in argument word"
   word = word.upper()
   syllables = PHODICT[word]
    return sum(int(syllable[0] in "AEIOU") for syllable in syllables)
def post_processor():
    "Removes single length rhyme groups"
   RHYME_DICT_COPY = RHYME_DICT.copy()
   for word in RHYME_DICT_COPY.keys():
       if (len(RHYME_DICT_COPY[word]) == 1):
           RHYME_DICT.pop(word)
rhyme_generator()
```

1545 WORDS

Eminem's Rap God

LOOK, I WAS GONNA GO EASY ON YOU AND NOT TO HURT YOUR FEELINGS

BUT I'M ONLY GOING TO GET THIS ONE CHANCE

SOMETHING'S WRONG, I CAN FEEL IT (SIX MINUTES, SLIM SHADY, YOU'RE ON)

JUST A FEELING I'VE GOT, LIKE SOMETHING'S ABOUT TO HAPPEN, BUT I DON'T KNOW WHAT

IF THAT MEANS, WHAT I THINK IT MEANS, WE'RE IN TROUBLE, BIG TROUBLE,

AND IF HE IS AS BANANAS AS A SAY, I'M NOT TAKING ANY CHANCES

YOU WERE JUST WHAT THE DOCTOR ORDERED

I'M BEGINNING TO FEEL LIKE A RAP GOD, RAP GOD

ALL MY PEOPLE FROM THE FRONT TO THE BACK NOD, BACK NOD

NOW WHO THINKS THEIR ARMS ARE LONG ENOUGH TO SLAP BOX, SLAP BOX?

THEY SAID I RAP LIKE A ROBOT, SO CALL ME RAPBOT

BUT FOR ME TO RAP LIKE A COMPUTER MUST BE IN MY GENES

I GOT A LAPTOP IN MY BACK POCKET

MY PEN'LL GO OFF WHEN I HALF-COCK IT

GOT A FAT KNOT FROM THAT RAP PROFIT

MADE A LIVING AND A KILLING OFF IT

EVER SINCE BILL CLINTON WAS STILL IN OFFICE

WITH MONICA LEWINSKY FEELING ON HIS NUT-SACK

I'M AN MC STILL AS HONEST

BUT AS RUDE AND INDECENT AS ALL HELL SYLLABLES, KILLAHOLIC (KILL 'EM ALL WITH)

THIS SLICKETY, GIBBEDY, HIBBEDY HIP HOP

YOU DON'T REALLY WANNA GET INTO A PISSING MATCH WITH THIS RAPPIDY BRAT

PACKING A MAC IN THE BACK OF THE AC, BACKPACK RAP CRAP, YEP, YACKIDY-YAC

AND AT THE EXACT SAME TIME I ATTEMPT THESE LYRICAL ACROBAT STUNTS WHILE I'M PRACTICING

THAT I'LL STILL BE ABLE TO BREAK A MOTHERFUCKIN' TABLE

OVER THE BACK OF A COUPLE OF FAGGOTS AND CRACK IT IN HALF

ONLY REALIZED IT WAS IRONIC I WAS SIGNED TO AFTERMATH AFTER THE FACT

HOW COULD I NOT BLOW? ALL I DO IS DROP F-BOMBS, FEEL MY WRATH OF ATTACK

RAPPERS ARE HAVING A ROUGH TIME PERIOD, HERE'S A MAXIPAD

IT'S ACTUALLY DISASTROUSLY BAD

FOR THE WACK WHILE I'M MASTERFULLY CONSTRUCTING THIS MASTERPIECE AS

I'M BEGINNING TO FEEL LIKE A RAP GOD, RAP GOD

ALL MY PEOPLE FROM THE FRONT TO THE BACK NOD, BACK NOD

NOW WHO THINKS THEIR ARMS ARE LONG ENOUGH TO SLAP BOX, SLAP BOX?

LET ME SHOW YOU MAINTAINING THIS SHIT AIN'T THAT HARD, THAT HARD

EVERYBODY WANT THE KEY AND THE SECRET TO RAP IMMORTALITY LIKE I HAVE GOT

WELL, TO BE TRUTHFUL THE BLUEPRINT'S SIMPLY RAGE AND YOUTHFUL EXUBERANCE

EVERYBODY LOVES TO ROOT FOR A NUISANCE

HIT THE EARTH LIKE AN ASTEROID, DID NOTHING BUT SHOOT FOR THE MOON SINCE

MC'S GET TAKEN TO SCHOOL WITH THIS MUSIC

'CAUSE I USE IT AS A VEHICLE TO BUS THE RHYME

NOW I LEAD A NEW SCHOOL FULL OF STUDENTS

ME? I'M A PRODUCT OF RAKIM, LAKIM SHABAZZ, 2PAC N-

-W.A, CUBE, HEY, DOC, REN, YELLA, EAZY, THANK YOU, THEY GOT SLIM

INSPIRED ENOUGH TO ONE DAY GROW UP, BLOW UP AND BE IN A POSITION TO MEET RUN DMC AND INDUCT THEM INTO THE MOTHERFUCKIN' ROCK N'

ROLL HALL OF FAME

EVEN THOUGH I WALK IN THE CHURCH AND BURST IN A BALL OF FLAMES

ONLY HALL OF FAME I BE INDUCTED IN IS THE ALCOHOL OF FAME

ON THE WALL OF SHAME

YOU FAGS THINK IT'S ALL A GAME 'TIL I WALK A FLOCK OF FLAMES

OFF OF PLANKING, TELL ME WHAT IN THE FUCK ARE YOU THINKING?

LITTLE GAY LOOKING BOY

SO GAY I CAN BARELY SAY IT WITH A STRAIGHT FACE LOOKING BOY

YOU WITNESSING A MASS OCCUR

LIKE YOU WATCHING A CHURCH GATHERING TAKE PLACE LOOKING BOY

OY VEY, THAT BOY'S GAY, THAT'S ALL THEY SAY LOOKING BOY

YOU GET A THUMBS UP, PAT ON THE BACK

AND A "WAY TO GO" FROM YOUR LABEL EVERYDAY LOOKING BOY

HEY, LOOKING BOY, WHAT YOU SAY LOOKING BOY?

I GOT A "HELL YEAH" FROM DRE LOOKING BOY

I'MMA WORK FOR EVERYTHING I HAVE

NEVER ASK NOBODY FOR SHIT, GET OUTTA MY FACE LOOKING BOY

BASICALLY BOY YOU'RE NEVER GONNA BE CAPABLE

TO KEEP UP WITH THE SAME PACE LOOKING BOY

'CAUSE I'M BEGINNING TO FEEL LIKE A RAP GOD, RAP GOD

ALL MY PEOPLE FROM THE FRONT TO THE BACK NOD, BACK NOD

THE WAY I'M RACING AROUND THE TRACK, CALL ME NASCAR, NASCAR

DALE EARNHARDT OF THE TRAILER PARK, THE WHITE TRASH GOD

KNEEL BEFORE GENERAL ZOD THIS PLANET'S KRYPTON, NO ASGARD, ASGARD

SO YOU BE THOR AND I'LL BE ODIN, YOU RODENT, I'M OMNIPOTENT

LET OFF THEN I'M RELOADING IMMEDIATELY WITH THESE BOMBS I'M TOTIN'

AND I SHOULD NOT BE WOKEN

I'M THE WALKING DEAD, BUT I'M JUST A TALKING HEAD, A ZOMBIE FLOATING

BUT I GOT YOUR MOM DEEP THROATING

I'M OUT MY RAMEN NOODLE, WE HAVE NOTHING IN COMMON, POODLE

I'M A DOBERMAN, PINCH YOURSELF IN THE ARM AND PAY HOMAGE, PUPIL

IT'S ME, MY HONESTY'S BRUTAL

BUT IT'S HONESTLY FUTILE IF I DON'T UTILIZE WHAT I DO THOUGH

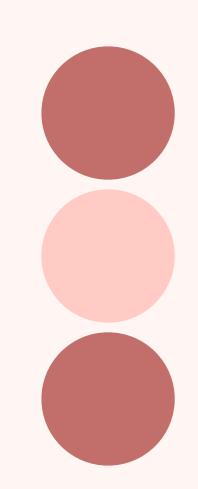
FOR GOOD AT LEAST ONCE IN A WHILE

SO I WANNA MAKE SURE SOMEWHERE IN THIS CHICKEN SCRATCH I SCRIBBLE AND DOODLE

ENOUGH RHYMES TO MAYBE TO TRY AND HELP GET SOME PEOPLE THROUGH TOUGH TIMES BUT I GOTTA KEEP A FEW PUNCHLINES JUST IN CASE 'CAUSE EVEN YOU UNSIGNED

BOTTOOTIA KEEL ATENTONOTIENNEO JOOTIN OAGE GAGGE EVEN TOO GINGI

RAPPERS ARE HUNGRY LOOKING AT ME LIKE IT'S LUNCHTIME



44X30 (CATEGORIES X MAX SIZE)

Eminem's Rap God

ASKING ASKING ASK VACATI DISCRIM STATION INTO INTO INTO INTO INTO INTO INTO	Part	Mathematical Content of the conten
ASKING ASKING ASK VACATI DISCRIM STATION STATION INATION STATION STAT	Mathematical Content of Math	Marcha M
ASKING ASKING ASK VACATI DISCRIM STATION STATION INATION TAKING TAKE TAKING YOUTHF UL UL UNDERG ROUND ANYTHI ING ING GELEVATI NG NG ROUND ING ROUND ING ROUND ING GELEVATI NG NG ROUND ING GELEVATI NG NG ROUND ING ROUND ING ROUND ING ROUND ING ROUND ING ROUND ING GELEVATI NG NG GELEVATI NG NG ROUND ING ROUND INDUCT	Marcha M	ASS
VACATI ON INATION STATION STAKING TAKE TAKING TAKE TAKING TAKE TAKING TAKE TAKING TOTAL TOTAL STATION	Marie Mari	Marie Mari
TAKING TAKE TAKING YOUTHF UL UL UNDERG ROUND ANYTHI EVERYTH NG ELEVATI NG ROUND NEVER FOREVER EVER NOODLE POODLE DOODLE NATTACK MAC CRACK ATTERM ATH NOBODY NOBODY SEE TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN G FUCK FUCKING FUCK FUCKING FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT D FEELING FEELING S COMBIN E IRONIC SUPERS OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	Tame 1 for 1	Mathematical Content of Math
YOUTHF UL UL UNDERG ROUND ANYTHI EVERYTH ANYTHIN NG ING GELEVATI NG NEVER FOREVER EVER NOODLE POODLE DOODLE NATTACK MAC CRACK AFTERM ATH ATH ATH NOBODY NOBODY SEE TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN G FUCK FUCKING GENTAL FUNKY FUNKY CHUNKY COCUR OCCUR OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND INDUCT DOTAL ALCOHO BALL HALL INDUCT INDUCT DEFELING FEELING FEELING COMBIN E IRONIC COMBIN	Norte	Mathematical Content of the conten
NEVER FOREVER EVER NOODLE POODLE DOODLE N ATTACK MAC CRACK AFTERM AFTERM WRATH ATH NOBODY NOBODY SEE TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN FUCK FUCKING PORTAL AL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT D FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	NEVER 1 FORCER 1 SEAR MAY 1 SEAR	Part
NEVER FOREVER EVER NOODLE POODLE DOODLE N ATTACK MAC CRACK A AFTERM AFTERM WRATH ATH NOBODY NOBODY SEE TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN FUCK FUCKING PORTAL AL PORTAL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT D FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	New Processes Conference Co	Part
NEVER FOREVER EVER NOODLE POODLE DOODLE N ATTACK MAC CRACK A AFTERM AFTERM WRATH ATH NOBODY NOBODY SEE TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN FUCK FUCKING PORTAL AL PORTAL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT D FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	New Processes Conference Co	Part
NEVER FOREVER EVER NOODLE POODLE DOODLE N ATTACK MAC CRACK AFTERM AFTERM WRATH ATH NOBODY NOBODY SEE TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN FUCK FUCKING PORTAL AL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT D FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	NEVER 1 FORCER 1 SEAR MAY 1 SEAR	Part
NOODLE POODLE DOODLE NATTACK MAC CRACK AFTERM ATH ATH NOBODY NOBODY SEE TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKING FUCK FUCKING PORTAL AL PUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND DETECT OF THE POOD OF THE POOD ON TO THE POOD ON T	Marche M	Solit Soli
ATTACK MAC CRACK AFTERM ATH ATH WRATH NOBODY NOBODY SEE TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN G FUCK FUCKING PORTAL IMMORT PORTAL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LYRICS HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT DO FEELING FEELING COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	Marche M	Month Mont
AFTERM ATH ATH NOBODY NOBODY SEE TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN G FUCK FUCKING PORTAL IMMORT PORTAL AL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT D FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	Part	Section Sect
TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN FUCK FUCKING PORTAL IMMORT PORTAL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT D FEELING FEELING S COMBIN LINE COMBIN E IRONIC ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	Note	See Rey Note 1
TRYING TRY TRYING CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN FUCK FUCKING PORTAL IMMORT AL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT INDUCTE D FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	Table Tabl	March Marc
CABLE TABLE LABEL HUMAN HUMAN SUPERH UMAN FUCKIN FUCK FUCKING PORTAL IMMORT PORTAL AL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT D FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	Carle Fine	AMEN CANK
HUMAN HUMAN SUPERH UMAN FUCKING FUCKING FUCK FUCKING PORTAL IMMORT AL FUNKY CHUNKY OCCUR OCCUR OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY HONEST LY NICE TIMES MIND FUT SURE GOOD OLL HALL INDUCT INDUCT DEFELING FEELING SCOMBIN E IRONIC ONIC LEAST ASLEEP CHEEK OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	Function	FUCKNO
FUCKIN G FUCK FUCKING PORTAL IMMORT AL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT D FEELING FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	FUNC FLOW FORTAL MANY PORTAL M	FORTIAL 1
PORTAL IMMORT AL FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT INDUCTE D FEELING FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SCOURT OCCUR CHUNKY CHUNKY CHUNKY HONEST LY IV HONEST LY HONEST LY INDUCT INDUCT INDUCT INDUCTE D SEELING FEELING S COMBIN E IRONIC ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E	MINION PORTAL MINION M	CHINKY JUNEY
FUNKY FUNKY CHUNKY OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT INDUCTE D FEELING FEELING S COMBIN E GOOD INDUCT INDUCT INDUCTE FEELING FEELING S COMBIN E IRONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E	FUNIX PUNIX CHUNKY DUNKY	CHUNCY JUNKY 1
OCCUR OCCURS OCCUR FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT INDUCTE D FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SUPICE ON THINKS	OCCUR OCCU	COUR FUTILE FUT
FUTILE BRUTAL FUTILE LYRICS LYRICS LYRICAL HONEST HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT INDUCTE D FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	Furtile Richard Rich	FUTILE FOR TO FOR TO FOR TO FOR TO FOR
LYRICS LYRICS LYRICAL HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO BALL HALL INDUCT INDUCT INDUCTE D FEELING FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	LYRICS L	LYRICAL
HONEST LY NICE TIMES MIND PUT SURE GOOD ALCOHO L INDUCT INDUCT FEELING FEELING COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN SHIT PINCH THINKS	NORST NORS	Horizon Hori
NICE TIMES MIND PUT SURE GOOD ALCOHO L INDUCT INDUCT INDUCTE D FEELING FEELING S COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	NICE TIMES MIND RHYME LIFE RHYMES GRIND AL LUNCHT LIKE NICE SIGNED SOMETHING	MIND RHYME LIFE RHYMES GRIND AI LIME LIKE NICE SIGNED SOMET WRITE WRITE TIME SCRIPT CF FIGHT CF F
PUT SURE GOOD ALCOHO L INDUCT INDUCT INDUCTE D FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	Pur	COOR COUNT COOKIN FULL LOOK PUT
ALCOHO L INDUCT INDUCT INDUCTE D FEELING FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	ALCHO BALL HALL CALL WALL FALL WALL FALL ALCOHO NDUCT INDUCT INDU	HALL CALL WALL FALL ALCOHO WALL FALL ALCOHO WALL FALL ALCOHO WALL FALL WALL W
INDUCT INDUCTE D FEELING FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	INDUCT I	NO NO NO NO NO NO NO NO
FEELING FEELING S COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	FEELING FEELIN	COMBIN NINE MINE
COMBIN LINE COMBIN E IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	COMBIN LINE COMBIN NINE MINE MIN	COMBIN NINE MINE
IRONIC SUPERS ONIC LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	IRONIC SUPERS TRONIC SUPERS TRONIC SUPERS TRONIC SUPERS TRONIC SUPERS TRONIC SUPERS S	IRONIC
LEAST ASLEEP CHEEK USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	LEAST ASLEEP CHEK DEEP NEED WHEEL KEEP SEAT SPEED GENES KNEEL FEEL SPEAK LEAGUES MEET LEAST MEANS APPEAL LEAD	CHEK DEP NED WHEL KEP SEAT SPEED GENS KNEL FEEL SPEAK LEAGUES MEET LEAST MEANS APPEAL LEAD
USE FUSE CUBE OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	USE FUSE CUBE LOSE GLUE ROOT SCHOOL SHOOT MOON NEW PROVE RUDE USE CONFUS F	CUBE LOSE GLUE ROOT SCHOOL SHOOT MOON NEW PROVE RUDE USE CONFUS FOR SAID TELL FELL SHIT SINCE BIG KIDS THINK THINK STILL SLIM MAD MASS FACT MATCH YEAH THANK ADD MAN SLAP FAGS PAD BRAT SCHOOL FROM CHURCH WORK WORDS EARTH STORM WORDS EARTH STORM WORDS SHOOK NOW GO BLOW THROW THROW THOUGH OH SHOW TO SHOW SOW SHOW GO BLOW THROW THOUGH OH SHOW TO SHOW SHOW SHOW THROW THOUGH OH SHOW TO SHOW SHOW THOW THOUGH OH SHOW TO SHOW THOW THOUGH OH SHOW TO SHOW THOW THOUGH OH SHOW TO SHOW THOW THOUGH OH SHOW THOW THOUGH OH SHOW TO SHOW THOW THOUGH OH SHOW THOW THOW THOUGH OH SHOW THOW THOW THOUGH OH SHOW THOW THOUGH OH SHOW THOW THOW THOUGH OH SHOW THOW THOUGH OH SHOW THOW THOW THOUGH OH SHOW THOW THOW THOUGH OH SHOW THOW THOW THOW THOW THOW THOW THOW T
OY BOYS OY NEXT WENT REN STUCK TOUGH ROUGH E SHIT PINCH THINKS	OY BOYS OY BOY	OY BOY GOY BOY GOY
NEXTWENTRENSTUCKTOUGHROUGHESHITPINCHTHINKS	NEXT WENT REN NEXT WELL HEAD LET HELP EM YEP DEAD HELL GET PEN SAID TELL FELL	REN NEXT WELL HEAD LET HELP EM YEP DEAD HELL GET PEN SAID TELL FELL TO THINK TOWN THOUGH ON SHOW THOW THOUGH ON SHOW THE PEN SAID TELL FELL TO THE SAID TELL FELL TO THE SAID TELL FELL TO THE SAID TELL THE SAID TELL THE SAID TELL THE SAID THE SAID TOWN THOUGH ON SHOW THOW THOUGH ON SHOW THOW THOUGH ON SHOW THOW THOUGH ON SHOW THOW THOUGH ON SHOW THE SAID THE SAID TELL THE SAID TELL THE SAID THE SAID TOWN THOUGH ON SHOW THE SAID THE SAID THE SAID THE SAID THE SAID TOWN THOUGH ON SHOW THOW THOUGH ON SHOW THOW THOUGH ON SHOW THOW THOUGH ON SHOW THE SAID THE
STUCK TOUGH ROUGH E SHIT PINCH THINKS	STUCK TOUGH ROUGH ENOUGH S THUMBS LOVES BUS CRUNCH FRONT STUNTS ONE RUN COME STUCK UH DRUNK MUST BRUNG COMING TONGUE STUCK UH DRUNK HIT SKILLS GIVE STUCK OF STUCK OF STUCK UH DRUNK HIT SKILLS GIVE STUCK OF STUCK OF STUCK UH DRUNK HIT SKILLS GIVE STUCK OF STUCK OF STUCK OF STUCK UH DRUNK HIT SKILLS GIVE STUCK OF STUCK OF STUCK OF STUCK OF STUCK UH DRUNK HIT SKILLS GIVE STUCK OF STUCK	ROUGH ENOUGH TONGUE S THUMBS LOVES BUS CRUNCH FRONT STUNTS ONE RUN COME STUCK UH DRUNK MUST BRUNG COMING TONGUE STUCK UH DRUNK HIT SKILLS GIVE STUCK UH DRUNK MUST BRUNG COMING TONGUE STUCK UH DRUNK HIT SKILLS GIVE STUCK UH DRUNK HIT SKILLS GIVE STUCK UH DRUNK MUST BRUNG COMING TONGUE STUCK UH DRUNK HIT SKILLS GIVE STUCK UH DRUNK WAS FACT MATCH YEAH THANK ADD MAN SLAP FAGS PAD BRAT SCRATC HAGE FAD FAT CHANCE ACROBA HALF BAD PAT RAP EXACT FAB STUCK UH DRUNK WORDS EARTH STUCK UH DRUNK WORDS EART
SHIT PINCH THINKS	SHIT PINCH THINKS TIL SLIM KILL THINKIN G SKIN HIP STILL BILL SIX PILL TRIP ILL SHIT SINCE BIG KIDS THINK HIT SKILLS GIVE SKIL	THINKS TIL SLIM KILL THINKIN G SKIN HIP STILL BILL SIX PILL TRIP ILL SHIT SINCE BIG KIDS THINK HIT SKILLS GIVE
	HALF CRAP TRASH MAD MASS FACT MATCH YEAH THANK ADD MAN SLAP FAGS PAD BRAT SCRATC H FAG FAD FAT CHANCE ACROBA HALF BAD PAT RAP EXACT FAB WORK BURST HURT CHURCH WORK WORDS EARTH MOM HOP BROAD ARM KNOT WAN HARD MOM BOMBS BOUGHT DROP RETARD YA ROBOT GOT POP WANT NOD GOD ARMS PARK LAPTOP BOX CAUSE	TRASH MAD MASS FACT MATCH YEAH THANK ADD MAN SLAP FAGS PAD BRAT SCRATC HANCE ACTOR A
HALF CRAP TRASH	WORK BURST HURT CHURCH WORK WORDS EARTH MOM HOP BROAD ARM KNOT WAN HARD MOM BOMBS BOUGHT DROP RETARD YA ROBOT GOT POP WANT NOD GOD ARMS PARK LAPTOP BOX CAUSE	HURT CHURCH WORK WORDS EARTH WORLD WORDS EARTH WORK WORDS EARTH WORLD WORDS EARTH WORLD WORDS EARTH WORLD WORDS EARTH WORLD WORDS EARTH WORK WORDS EARTH WORD
	MOM HOP BROAD ARM KNOT WAN HARD MOM BOMBS BOUGHT DROP RETARD YA ROBOT GOT POP WANT NOD GOD ARMS PARK LAPTOP BOX CAUSE	BROAD ARM KNOT WAN HARD MOM BOMBS BOUGHT DROP RETARD YA ROBOT GOT POP WANT NOD GOD ARMS PARK LAPTOP BOX CAUSE
		GROW KNOW GO BLOW THROW THOUGH OH SHOW
	OH ROLL GROW KNOW GO BLOW THROW THOUGH OH SHOW	
NOTE ONOW		
SONGS WRONG THOR	G MILL SOLOS LEGAL	HATE J DAY MISTAKE PLAYED FACE GAY SHAME EVERYDA PLACE VEY CASE MADE SAY PACE CAKE BREAK GAME MAKE MAY RAGE PAY RAY AWAY BAKE FAME WAY HEY FLAMES
WORK BURST HURT C		THOR SHOCK ROCK WALKIN WARP SONGS FLOCK DOC WALK LONG

FUTURE IMPROVEMENTS

(Immediately possible refinements)

- O Refine assonance rhyme because not all same vowel sound words rhyme (i.e. "rap," "tack," "rat" rhyme, but "rap" and "ham" are too much of a stretch)
- O Refine assonance rhyme function to combine not only single syllable categories but also multi-syllabic categories (i.e. from previous slide: "attack" and "half")
- O Host the program on a website server for others to use

FUTURE IMPROVEMENTS

(More difficult refinements)

- O Have the program guess the pronunciation of proper nouns and slang (rap contains a plethora of references from pop culture, etc., which will not be found in the CMU pronunciation dictionary)
- O Have the program match compound rhymes, rhymes that span multiple words
- Change from outputting excel file to highlighting words (currently not supported because too many categories and thus too many colors)