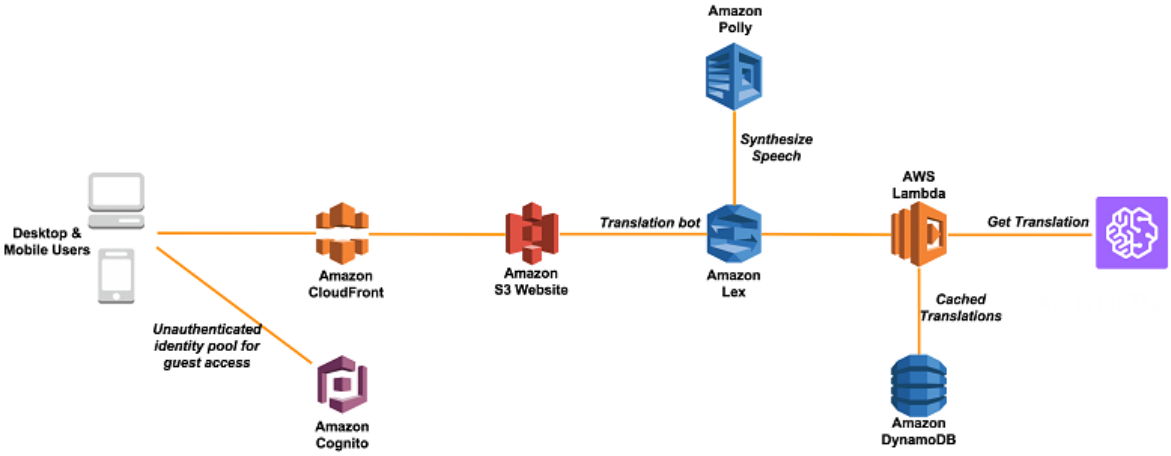
AWS MAJOR PROJECT

Name: katamoni koundinya goud
Google classroom: AWS-04-SPB1

Abstract
Creating an text translate bot using amazon translate and amazon lex

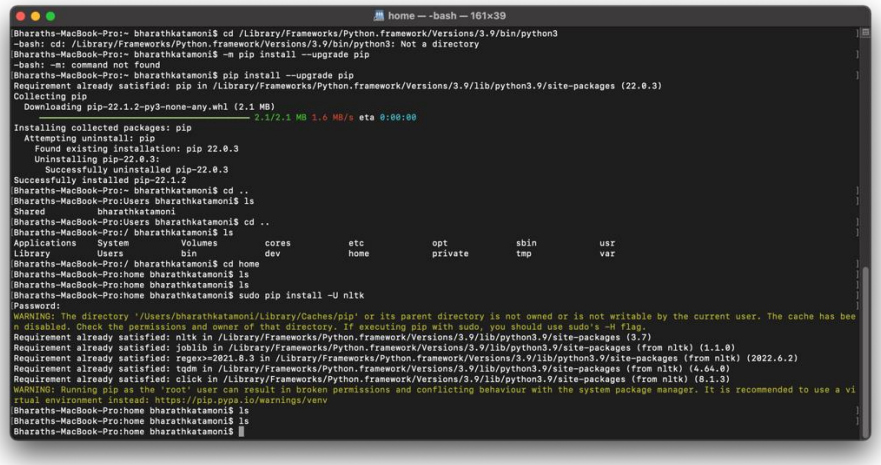
The working model of the translate bot



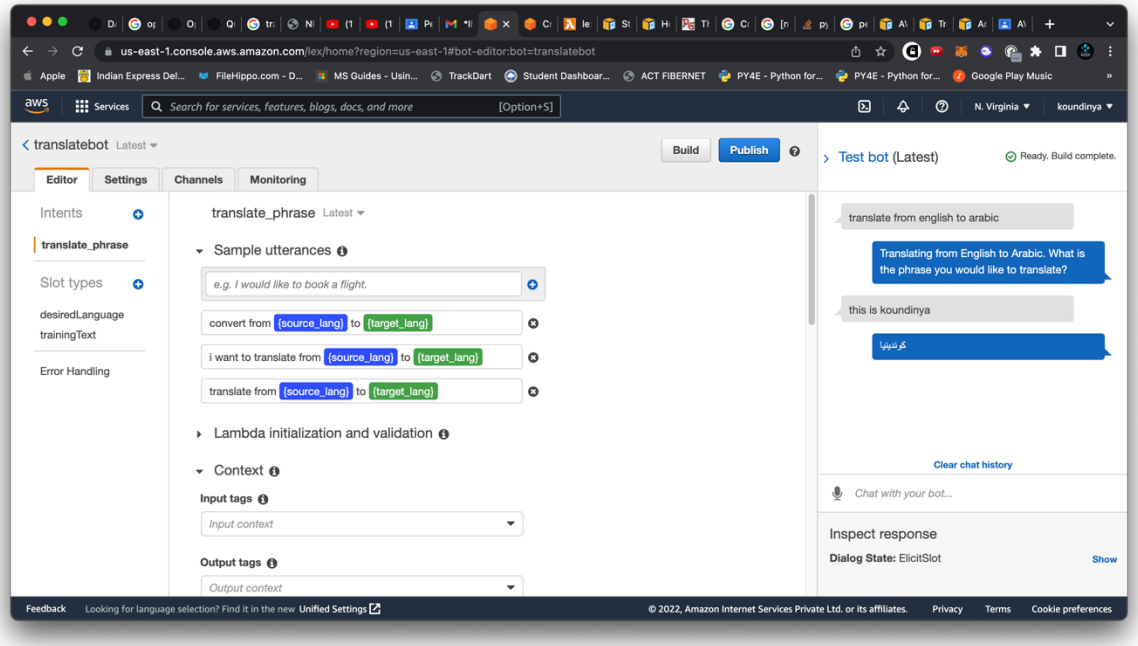
The user can request to translate the language in the chatbot and this entire architecture is based on serverless computing

Downloading and processing dataset

I used a book called sherlock.txt for my dataset processing and to clean the data set I used the following code to phrase the text and save it using the zip format
I also used the neural language toolkit for cleaning the dataset and phrasing the text which tokenises the sentences



Creating an amazon lex bot



Creating a lambda function to grab the api from the amazon translate and serve the bot with the specified permission's I managed to create a function and choose python 3.9 for the writing code which as follows

```
# -*- coding: utf-8 -*-
"""
This function interacts with Amazon Lex and the Amazon Translate AWS services to receive input speech
and then translate it to the requested language.
Current supported translations as of July 2018 are:

English to
    Arabic (ar)
    Chinese (Simplified) (zh)
    Chinese (Traditional) (zh-TW)
    Czech (cs)
    French (fr)
    German (de)
    Italian (it)
    Japanese (ja)
    Portuguese (pt)
    Russian (ru)
    Spanish (es)
    Turkish (tr)

Please see the Amazon Translate API docs for an up to date list:
https://docs.aws.amazon.com/translate/latest/dg/API_TranslateText.html
"""
```

```
from __future__ import print_function
import boto3
import logging


logger = logging.getLogger()
logger.setLevel(logging.DEBUG)

# boto3 translate client
translate = boto3.client('translate')

# Use a dictionary to map supported languages with their ISO639-1 codes
lang_map = {
   'arabic': 'ar',
   'simplified chinese': 'zh',
   'traditional chinese': 'zh-TW',
   'czech': 'cs',
   'english': 'en',
   'french': 'fr',
   'german': 'de',
   'italian': 'it',
   'japanese': 'ja',
   'portuguese': 'pt',
   'russian': 'ru',
   'spanish': 'es',
   'turkish': 'tr'
   }

# ---------- Helpers that build all of the responses ----------

def get_slots(intent_request):
   return intent_request['currentIntent']['slots']

def elicit_slot(session_attributes, intent_name, slots, slot_to_elicit, message):
   logger.debug('Elicit Slot function intentName: {}'.format(intent_name))
   logger.debug('Elicit Slot function slots: {}'.format(slots))
   logger.debug('Elicit Slot function slotToElicit: {}'.format(slot_to_elicit))
   logger.debug('Elicit Slot function message: {}'.format(message))


   return {
      'sessionAttributes': session_attributes,
      'dialogAction': {
         'type': 'ElicitSlot',
         'intentName': intent_name,
         'slots': slots,
```

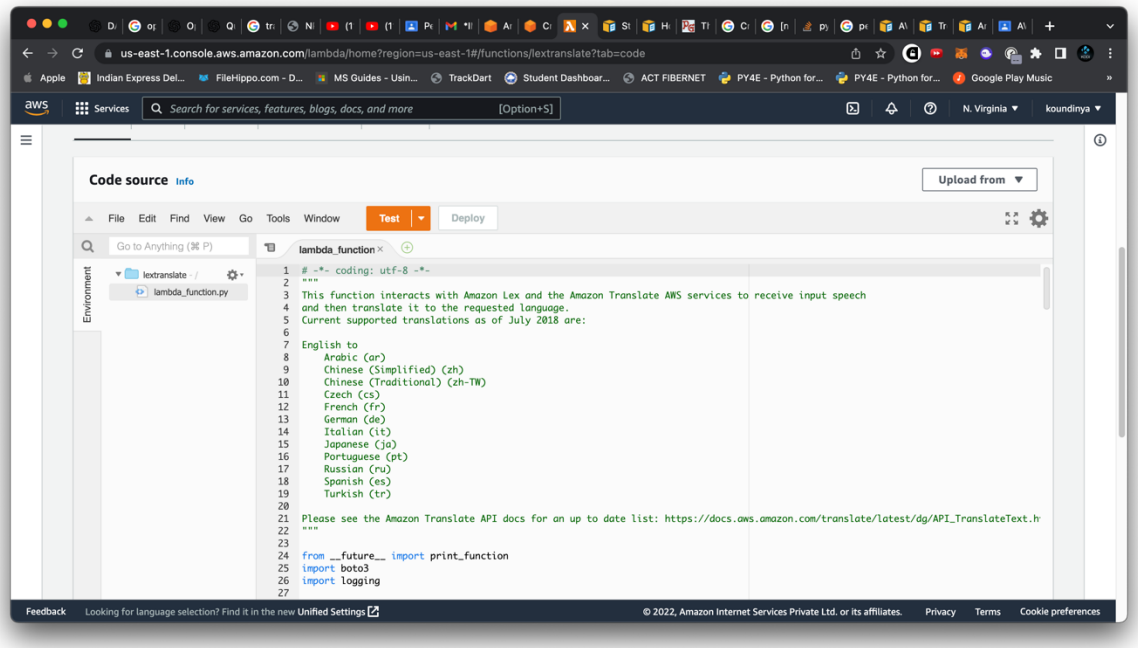
```
            'slotToElicit': slot_to_elicit,
            'message': message
        }
    }


def confirm_intent(session_attributes, intent_name, slots, message):
    return {
        'sessionAttributes': session_attributes,
        'dialogAction': {
            'type': 'ConfirmIntent',
            'intentName': intent_name,
            'slots': slots,
            'message': message
        }
    }


def close(session_attributes, fulfillment_state, message):
    response = {
        'sessionAttributes': session_attributes,
        'dialogAction': {
            'type': 'Close',
            'fulfillmentState': fulfillment_state,
            'message': message
        }
    }

    return response


def delegate(session_attributes, slots):
    return {
        'sessionAttributes': session_attributes,
        'dialogAction': {
            'type': 'Delegate',
            'slots': slots
        }
    }

# --------------- Functions that control the skill's behavior ------------------
def try_ex(func):
    """
    Call passed in function in try block. If KeyError is encountered return None.
    This function is intended to be used to safely access dictionary.

    Note that this function would have negative impact on performance.
```

```
    """

    try:
        return func()
    except KeyError:
        return None

# return JSON-formatted descriptive response if validation fails
def build_validation_result(isvalid, violated_slot, message_content):
    return {
        'isValid': isvalid,
        'violatedSlot': violated_slot,
        'message': {'contentType': 'PlainText', 'content': message_content}
    }

# validate source and target languages
def validate_languages(source_lang, target_lang):
    if source_lang is not None and source_lang not in lang_map:
        return build_validation_result(False,
                                       'source_lang',
                                       'We do not currently support {} as a source
language.'.format(source_lang))

    if target_lang is not None and target_lang not in lang_map:
        return build_validation_result(False,
                                       'target_lang',
                                       'We do not currently support {} as a target
language.'.format(source_lang))

    return build_validation_result(True, None, None)

# Check phrase is not empty
def validate_phrase(phrase, source_lang, target_lang):
    if phrase is not None:
        logger.debug('***** phrase is not none *****')
        return build_validation_result(True, None, None)
    else:
        logger.debug('***** phrase is none *****')
        return build_validation_result(False,
                                       'phrase',
                                       'Translating from {} to {}. What is the phrase you would like to
translate?'.format(source_lang.capitalize(), target_lang.capitalize()))

# ---------- Main Translator function ----------

def translatePhrase(intent_request):
    """
```

```
    Performs dialog management and fulfillment for translating a phrase.

    Uses Amazon Translate to translate a phrase from a source -> destination phrase and
provide to customer
    """

    source_lang = get_slots(intent_request)['source_lang'].lower()
    target_lang = get_slots(intent_request)['target_lang'].lower()
    phrase = get_slots(intent_request)['phrase']
    source = intent_request['invocationSource']

    logger.debug('Intent Request={}'.format(intent_request))
    logger.debug('source_lang={}'.format(source_lang))
    logger.debug('target_lang={}'.format(target_lang))


    logger.debug('Phrase={}'.format(phrase))
    logger.debug('inputTranscript={}'.format(intent_request['inputTranscript']))

    # Set session attrributes for the value of source and target languages
    session_attributes = intent_request['sessionAttributes'] if
intent_request['sessionAttributes'] is not None else {}


    if source == 'DialogCodeHook':
        # Validate any slots which have been specified.  If any are invalid, re-elicit for their value
        slots = get_slots(intent_request)

        validation_result = validate_languages(source_lang, target_lang) #check languages are
valid and supported
        if not validation_result['isValid']:
            slots[validation_result['violatedSlot']] = None
            return elicit_slot(intent_request['sessionAttributes'],
                               intent_request['currentIntent']['name'],
                               slots,
                               validation_result['violatedSlot'],
                               validation_result['message'])
        logger.debug('Validated Languages')

        # Convert languages to ISO639-1 codes for Amazon Translate
        sourceISO = lang_map[source_lang]
        targetISO = lang_map[target_lang]

        logger.debug('sourceISO={}'.format(sourceISO))
        logger.debug('targetISO={}'.format(targetISO))
        #Set session attributes for the value of source and target ISO codes
        session_attributes['source_lang'] = sourceISO
```

```
    session_attributes['target_lang'] = targetISO

    phrase = get_slots(intent_request)['phrase']
    logger.debug('Phrase in dialogCodeHook code={}'.format(phrase))
    valid_phrase = validate_phrase(phrase, source_lang, target_lang)
    if not valid_phrase['isValid']:
      slots[valid_phrase['violatedSlot']] = None
      return elicit_slot(intent_request['sessionAttributes'],
                  intent_request['currentIntent']['name'],
                  slots,
                  valid_phrase['violatedSlot'],
                  valid_phrase['message'])
    logger.debug('Validated Phrase')

    # Phrase is valid. Convert phrase to translated text then reset slot to none for next
translation
    if phrase is not None:
      translation = try_ex(lambda: translate.translate_text(Text=phrase,
SourceLanguageCode=sourceISO, TargetLanguageCode=targetISO))
      translatedText = str(translation.get('TranslatedText'))
      logger.debug('Translated Text is={}'.format(translatedText))
      print ("Translation is: ", translatedText)

      intent_request['currentIntent']['phrase'] = None
      logger.debug('Set phrase slot to None and returning elicit slot with translation')
      logger.debug('Phrase={}'.format(intent_request['currentIntent']['phrase']))

      return elicit_slot(intent_request['sessionAttributes'],
                  intent_request['currentIntent']['name'],
                  slots,
                  'phrase',
                  {
                  'contentType': 'PlainText',
                  'content': format(translatedText)
                  })
    logger.debug('Translated Phrase')
    return delegate(session_attributes, intent_request['currentIntent']['slots'])

  # Convert phrase to translated text
  translation = try_ex(lambda: translate.translate_text(Text=phrase,
SourceLanguageCode=sourceISO, TargetLanguageCode=targetISO))
  translatedText = str(translation.get('TranslatedText'))

  logger.debug('Translated Text is={}'.format(translatedText))
  print ("Translation is: ", translatedText)
```

```
    return close(
        session_attributes,
        'Fulfilled',
        {
            'contentType': 'PlainText',
            'content': 'Thank you for using the translator bot'
        }
    )


# --- Lex intent capture ---


def dispatch(intent_request):
    """
    Called when the user specifies an intent for this bot.
    """

    logger.debug('dispatch userId={}, intentName={}'.format(intent_request['userId'],
intent_request['currentIntent']['name']))

    intent_name = intent_request['currentIntent']['name']

    # Dispatch to your bot's intent handlers
    if intent_name == 'translate_phrase':
        return translatePhrase(intent_request)
    raise Exception('Intent with name ' + intent_name + ' not supported')


# --- Main lambda handler ---


def lambda_handler(event, context):
    """
    Route the incoming request based on intent.
    The JSON body of the request is provided in the event slot.
    """
    logger.debug('event.bot.name={}'.format(event['bot']['name']))

    return dispatch(event)
```



Test bot in action