

# MP3 CONCERNS & FAQs

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**Important Note: The following documents are based on AWS Lex v1.**

1. For BFS, do you know if those paths are directional or bidirectional?
  - The graph is directional. You can return -1 for source - destination pair.
2. What about the situation of both source and destination as the same city. For example: source: Chicago, destination: Chicago? Should we return -1?
  - You can return 0. Treat the graph as directed, and return -1 for invalid pair, 0 for identical source and destination.
3. Error in communicating with lex: An error occurred (ValidationException) when calling the GetId operation
  - In AWS, you go to "account settings", and the account id is the all digit number labelled as "Account Id."
4. MP3 IdentityPool error:
  - Change the location from us-west-2 to us-east-1 (Basically the region autograder). It might fix.
5. Error Distance calculated is not int: invalid literal for int() with base 10: 'Source?'
  - AMAZON.CITY only accepts city names, while the nodes in our test cases are not city names. <https://developer.amazon.com/en-US/docs/alexa/custom-skills/slot-type-reference.html>
6. Test.py issue:
  - Leaving out 'https://' in 'test.py' for 'graphAPI'. Add it, test.py will pass.
7. A generic confusion - "The graph doesn't need to be completely connected."
  - Please read the assignment instructions on how to handle this case."
8. Problem with GraphAPI Submission url
  - It's the API gateway uRL, no "arn-" just URL used to POST graph
9. MP3 501 not implemented
  - update the correct 12 digit id with no dashes - account id related issue?
  - click PUBLISH the lex , that's where you name the bot alias
  - Increase the timeout to 30 seconds and that fixed it.

## Some tips

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### For POST API

- For setting up DynamoDB, IAM role & Lambda function, carefully follow Step 1, Step 2 & Step 3 - <https://aws.amazon.com/getting-started/projects/build-serverless-web-app-lambda-apigateway-s3-dynamodb-cognito/module-3/>
- Use requestUnicorn.js as example for your Lambda function - Step 3 - <https://aws.amazon.com/getting-started/projects/build-serverless-web-app-lambda-apigateway-s3-dynamodb-cognito/module-3/>
- For deploying your REST API, follow Step 1, Step 3 & Step 4 - <https://aws.amazon.com/getting-started/projects/build-serverless-web-app-lambda-apigateway-s3-dynamodb-cognito/module-4/>
- For setting up Identify Pool, refer to "Set up Amazon Cognito" section - <https://aws.amazon.com/blogs/machine-learning/greetings-visitor-engage-your-web-users-with-amazon-lex/>
- In your API you need to set AUTH to either NONE or AWS\_IAM
- For API URL, you need to expand the Stage that you created and use the URL from POST
- Use Lambda console to test your function
- If you use a Test event, then the double quotes in the body value has to be properly escaped. Ex:"body": "{\\"graph\\": \\"city100\\"}" *API should return status code: 200* Use CloudWatch logs for debugging/testing
- Test your API from console and Postman before running test.py

### For Lex

- There are many tutorials. I used this one: <https://chatbotsmagazine.com/quick-start-develop-a-chat-bot-with-aws-lex-lambda-part-1-b6f7c80ebba6>
- If you are new to Lex, you need to build your bot first for testing. Lex Console automatically shows test window
- You can quickly test your bot without any Lambda function (try this first if you are new to Lex)
- For quick testing, you can also create a simple Lambda handler. Lex-Lambda expects request/response JSON in a certain format. Refer here: <https://docs.aws.amazon.com/lex/latest/dg/lambda-input-response-format.html>
- Your Lambda function can use "getItem" to read data from DynamoDB
- Make sure you grant necessary Read/Write permissions in the inline policy for DynamoDB
- Like your graph Lambda function, test bot Lambda function from the Lambda console and from Lex console

- Use CloudWatch logs for debugging/testing
- Don't forget to publish your bot

## test.py

- test.py expects POST response code to be 200
- For account ID, remove the hyphens
- For "flush the respective table of your database before storing this state", you can also simply drop the items from the DynamoDB console before running test.py

## Resources

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1. Graph (Directed graph)
  - <https://www.python.org/doc/essays/graphs/>
  - <https://medium.com/@yasufumy/algorithm-breadth-first-search-408297a075c9>
2. Writing to DynamoDB
  - <https://boto3.amazonaws.com/v1/documentation/api/latest/guide/dynamodb.html>
3. Allow Lambda to execute DynamoDB
  - <https://docs.aws.amazon.com/lambda/latest/dg/with-ddb-example.html>
4. Lex blueprint
  - <https://docs.aws.amazon.com/lex/latest/dg/lex-lambda-blueprints.html>
5. Lex Input/ Response format (helpful to test your bot)
  - <https://docs.aws.amazon.com/lex/latest/dg/lambda-input-response-format.html>
6. Tips:
  - when parsing your graph, you should be able to parse ", " (In the instruction it was ", " -- with space)
  - on Gateway API check if you enable CORS in your method
  - CloudWatch is indeed your friend, I wish I'd known this earlier

## Additional FAQs

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1. The graph doesn't need to be completely connected.
2. 504 Gateway Timeout: endpoint request timed out
  - The reason is that API Gateway has a hard limit of 30 seconds for every request. It is not possible to change. It does not matter if lambda has a higher limit set. The most time consuming part and the culprit of the timeout is deletion of the dynamo db table. Changing deletion to deleting all items instead which is much faster.
3. MP3 : AccessDeniedException - dynamoTable.scan(ProjectionExpression='Distance')['Items']
  - Try to give full access permission and check once.
  - Try using table.get\_item
4. Error in communicating with your lex: An error occurred (AccessDeniedException)
  - For the Identity pool created on Cognito, provide Lex accesses on IAM.
5. 501 Not Implemented
  - Error in communicating with your lex: An error occurred (InvalidIdentityPoolConfigurationException) when calling the GetCredentialsForIdentity operation: Invalid identity pool configuration. Check assigned IAM roles for this pool.
  - Recreate cognito identity pools and it might work.
6. API gateway "Missing Authentication Token"
  - Make sure the policy assigned to the role that is used in the lambda function is correct.