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package main

import (
    "types"
    "fmt"
    "os"
    "encoding/json"
    "errors"

    "github.com/aws/aws-sdk-go/aws"
    "github.com/aws/aws-lambda-go/lambda"
    "github.com/aws/aws-lambda-go/events"
    "github.com/aws/aws-sdk-go/aws/session"
    "github.com/aws/aws-sdk-go/service/dynamodb"
    "github.com/aws/aws-sdk-go/service/dynamodb/dynamodbattribute"
    "github.com/aws/aws-sdk-go/service/dynamodb/dynamodbiface"
)

type SuccessResponse struct{
    Status      string      `json:"status"`
    Device      types.Device `json:"data"`
}

type dynamoDBAPI struct{
    DynamoDB dynamodbiface.DynamoDBAPI
}

var databseStruct *types.DatabseStruct
var dynamodbapi *dynamoDBAPI

func init(){
    databseStruct = new(types.DatabseStruct)
    region := os.Getenv("AWS_REGION")
    dynamodbapi = new(dynamoDBAPI) // crate a setter that can be used for inserting
    sess, err := session.NewSession(&aws.Config{Region: &region},)
    databseStruct.SessionError = err
    svc := dynamodb.New(sess)
    dynamodbapi.DynamoDB = dynamodbiface.DynamoDBAPI(svc)

    if err != nil {
        fmt.Println("There is an error while creating database session: " + err.Error())
    }

    // Get table name from OS's environment
    fetchedTableName :=os.Getenv("DEVICES_TABLE_NAME")
    if len(fetchedTableName)==0 {
        databseStruct.TableName = nil;
        fmt.Println("It is not possible to fetch device tabel name")
    }else{
        databseStruct.TableName = aws.String(fetchedTableName)
    }
}

// main AWS lambda function starting point.
// It gets some inputs from client as json, parse it and tries to insert it into dynamodb.
// valid input json is like types.Device struct
func AddDevice(request events.APIGatewayProxyRequest) (events.APIGatewayProxyResponse, error) {

    // there is some internal server error
    if databseStruct.SessionError != nil || databseStruct.TableName == nil {
        return events.APIGatewayProxyResponse{
            Body:      createErrorResponseJson(500, "Internal Server's Error occured"),
            StatusCode: 500,
        }, nil
    }

    // validate inputs of client's request (APIGatewayProxyRequest).
    newDevice, err := validateInputs(request)

    // if inputs are not suitable, return HTTP 400 error
    if err != nil {
        return events.APIGatewayProxyResponse{
            Body:      "" + err.Error(),
            StatusCode: 400,
        }, nil
    }

    _, err = dynamodbapi.insertItemToDatabase(newDevice)

    // If an internal error occurred in the database , return HTTP error 500
    if err != nil {
        return events.APIGatewayProxyResponse{
            Body:      createErrorResponseJson(500,"Internal Server's Error occured"),
            StatusCode: 500,
        },nil
    }
}
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    }

    // looks fine, item inserted and result will be returned.
    return createSuccessResponseJson(newDevice)
}

func validateInputs(request events.APIGatewayProxyRequest) (types.Device, error) {

    var errorFlag bool = false

    // Initialize device json object(struct)
    device := types.Device{
        ID: "",
        DeviceModel: "",
        Name: "",
        Note: "",
        Serial: "",
    }

    errorMessage := ""

    if len(request.Body) == 0 {
        errorMessage = "No inputs provided, please provide inputs in json format."
        return types.Device{}, errors.New(createErrorResponseJson(400, errorMessage))
    }

    // Parse request body, gets body of request then parse it to json and finally assigns it to device
    var err = json.Unmarshal([]byte(request.Body), &device)

    if err != nil {
        errorMessage = "Wrong format: Inputs must be a valid json."
        return types.Device{}, errors.New(createErrorResponseJson(400, errorMessage))
    }

    errorMessage = "Following fields are not provided: "

    if len(device.ID) == 0 {
        errorMessage += "id, "
        errorFlag = true
    }

    if len(device.DeviceModel) == 0 {
        errorMessage += "deviceModel, "
        errorFlag = true
    }

    if len(device.Name) == 0 {
        errorMessage += "name, "
        errorFlag = true
    }

    if len(device.Note) == 0 {
        errorMessage += "note, "
        errorFlag = true
    }

    if len(device.Serial) == 0 {
        errorMessage += "serial, "
        errorFlag = true
    }

    // if some fields are missin, report it as an error
    if errorFlag == true {
        return types.Device{}, errors.New(createErrorResponseJson(400, errorMessage))
    }
    // everything looks fine, return created device
    return device, nil
}

func createErrorResponseJson(errorCode int, errorMessage string) (jsonString string) {

    errorResponse := types.ErrorResponse { ErrorMessage: types.ErrorMessage { Code: errorCode, Message: errorMessage}, }
    errorResponseJson, _ := json.MarshalIndent(&errorResponse, "", "\t")
    return string(errorResponseJson)
}

func createSuccessResponseJson(newDevice types.Device) (events.APIGatewayProxyResponse, error){
    successResponse := SuccessResponse {
        "requested item inserted",
        newDevice,
    }

    successResponseJson, _ := json.MarshalIndent(&successResponse, "", "\t")

    return events.APIGatewayProxyResponse {
        Body: string(successResponseJson),
        StatusCode: 201,
    }, nil
}

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// function that just insert requested item to dynamodb's table.
func (ig *dynamoDBAPI) insertItemToDatabase(newDevice types.Device)(*dynamodb.PutItemOutput, error){

    // marshal newDevice struct(object) as a dynamodb item
    item, _ := dynamodbattribute.MarshalMap(newDevice)

    // preparing an input for dynamodb
    input := &dynamodb.PutItemInput{
        Item: item,
        TableName: databseStruct.TableName,
    }

    // put created input to dynamodb
    output, err := ig.DynamoDB.PutItem(input)
    return output, err
}

func main(){
    // aws lambda function calls it
    lambda.Start(AddDevice)
}
```