Code

The below code sits in an IBM Cloud Function action. The action is triggered by a Watson Assistant webhook dialogue by hitting this endpoint https://us-south.functions.appdomain.cloud/api/v1/web/46be4247-c2c6-4323-9fc5-dd5f6d84b790/default/Med%20Assist%20intermediary with a POST request. The request takes a request body containing the symptoms recognized by the Watson Assistant chat.

Sample input: { "poluria":"polyuria", "obesity":"obesity", "restlessness":"restlessness", "irregular_sugar_levels":"irregular sugar levels", "weight_loss":"weight loss" }

Sample output: {'response': 'Diabetes ', 'precautions': 'have balanced diet, exercise, consult doctor, follow up'}

In [1]:

```
#
#
# main() will be run when you invoke this action
#
# @param Cloud Functions actions accept a single parameter, which must be a J
#
# @return The output of this action, which must be a JSON object.
#
#

# Reference for safe-keeping
# https://dataplatform.cloud.ibm.com/docs/content/wsj/analyze-data/project-li
import sys
import numpy as np
import requests


fields = [
                                "abdominal_pain",
                                "abnormal_menstruation",
                                "acidity",
                                "acute_liver_failure",
                                "altered_sensorium",
                                "anxiety",
                                "back_pain",
                                "belly_pain",
                                "blackheads",
                                "bladder_discomfort",
                                "blister",
                                "blood_in_sputum",
                                "bloody_stool",
                                "blurred_and_distorted_vision",
                                "breathlessness",
                                "brittle_nails",
                                "bruising",
                                "burning_micturition",
                                "chest_pain",
                                "chills",
                                "cold_hands_and_feet",
                                "coma",
                                "congestion",
                                "constipation",
                                "continuous_feel_of_urine",
                                "continuous_sneezing",
                                "cough",
                                "cramps",
                                "dark_urine",
                                "dehydration",
                                "depression",
                                "diarrhoea",
                                "dyschromic_patches",
                                "distention_of_abdomen",
                                "dizziness",
                                "drying_and_tingling_lips",
                                "enlarged_thyroid",
                                "excessive_hunger",
                                "extra_marital_contacts",
                                "family_history",
                                "fast_heart_rate",
                                "fatigue",
                                "fluid_overload",
                                "fluid_overload.1",
                                "foul_smell_of urine",
                                "headache",
                                "high_fever",
                                "hip_joint_pain",
                                "history_of_alcohol_consumption",
                                "increased_appetite",
                                "indigestion",
                                "inflammatory_nails",
                                "internal_itching",
                                "irregular_sugar_level",
                                "irritability",
                                "irritation_in_anus",
                                "itching",
                                "joint_pain",
                                "knee_pain",
                                "lack_of_concentration",
                                "lethargy",
                                "loss_of_appetite",
                                "loss_of_balance",
                                "loss_of_smell",
                                "loss_of_taste",
                                "malaise",
                                "mild_fever",
                                "mood_swings",
                                "movement_stiffness",
                                "mucoid_sputum",
                                "muscle_pain",
                                "muscle_wasting",
                                "muscle_weakness",
                                "nausea",
                                "neck_pain",
                                "nodal_skin_eruptions",
                                "obesity",
                                "pain_behind_the_eyes",
                                "pain_during_bowel_movements",
                                "pain_in_anal_region",
                                "painful_walking",
                                "palpitations",
                                "passage_of_gases",
                                "patches_in_throat",
                                "phlegm",
                                "polyuria",
                                "prominent_veins_on_calf",
                                "puffy_face_and_eyes",
                                "pus_filled_pimples",
                                "receiving_blood_transfusion",
                                "receiving_unsterile_injections",
                                "red_sore_around_nose",
                                "red_spots_over_body",
                                "redness_of_eyes",
                                "restlessness",
                                "runny_nose",
                                "rusty_sputum",
                                "scurrying",
                                "shivering",
                                "silver_like_dusting",
                                "sinus_pressure",
                                "skin_peeling",
                                "skin_rash",
                                "slurred_speech",
                                "small_dents_in_nails",
                                "spinning_movements",
                                "spotting_urination",
                                "stiff_neck",
                                "stomach_bleeding",
                                "stomach_pain",
                                "sunken_eyes",
                                "sweating",
                                "swelled_lymph_nodes",
                                "swelling_joints",
                                "swelling_of_stomach",
                                "swollen_blood_vessels",
                                "swollen_extremities",
                                "swollen_legs",
                                "throat_irritation",
                                "tiredness",
                                "toxic_look_(typhus)",
                                "ulcers_on_tongue",
                                "unsteadiness",
                                "visual_disturbances",
                                "vomiting",
                                "watering_from_eyes",
                                "weakness_in_limbs",
                                "weakness_of_one_body_side",
                                "weight_gain",
                                "weight_loss",
                                "yellow_crust_ooze",
                                "yellow_urine",
                                "yellowing_of_eyes",
                                "yellowish_skin"
                        ]

values = [0] * 134


precautions = {
    "Diabetes ": ["have balanced diet", "exercise","consult doctor", "follow 
    "Heart attack": ["chew aspirin"],
    "GERD": ["avoid fatty spicy food", "avoid lying down after eating", "main
}
```

In [2]:

```
def main(body):

    for key in body:
        if type(body[key]) is str and key in fields:
            index_of_key = fields.index(key)
            values[index_of_key] = 1

    # NOTE: you must manually set API_KEY below using information retrieved f
    API_KEY = "DBGDI6dCUz1IcbNvP29nk4cLIMiIGzMFtg1WFs2W9Wk0"
    token_response = requests.post('https://iam.cloud.ibm.com/identity/token'
     API_KEY, "grant_type": 'urn:ibm:params:oauth:grant-type:apikey'})
    mltoken = token_response.json()["access_token"]

    header = {'Content-Type': 'application/json', 'Authorization': 'Bearer '

    # NOTE: manually define and pass the array(s) of values to be scored in t
    payload_scoring = {"input_data": [{"fields": fields, "values": [values]}]

    response_scoring = requests.post('https://us-south.ml.cloud.ibm.com/ml/v4
     headers={'Authorization': 'Bearer ' + mltoken})
    # print("Scoring response")

    prediction = response_scoring.json()['predictions'][0]['values'][0][0]
    precaution_output = ''
    if prediction in precautions.keys():
        precaution_output = precautions[prediction]

    precaution_output = ', '.join(precaution_output)
    return { 'response': prediction, 'precautions': precaution_output }
```

In [3]:

```
# example API output
main({
    "poluria":"polyuria",
    "obesity":"obesity",
    "restlessness":"restlessness",
    "irregular_sugar_levels":"irregular sugar levels",
    "weight_loss":"weight loss"})
```

Out[3]:

```
{'response': 'Diabetes ',
 'precautions': 'have balanced diet, exercise, consult doctor, follow up'}
```