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Course: **ECE3502: IoT Domain Analyst** Date: April 22, 2022

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1 Problem

A. Write a python program to calculate the total profits of a Video Game store "ROCK-STAR" for a period of 30 days. The following are the data and constraints. The store has 500 copies of GTA V each costing Rs.2,000, 800 copies of Red Dead Redemption II (RDR II) each costing Rs. 3500 and 500 copies of GTA Trilogy remaster each costing Rs. 2500. The selling prices are, GTA V: Rs. 2,500, RDR II: Rs. 3,999, GTA Trilogy remaster: Rs. 2,999. Assume any random number of visitors to the store every day with random choice of game selection. (Use 'rand' function to generate random data) 'A' list games such as GTA V and Red Dead Redemption II can have an additional profit of 10 percent added per game sale. Remastered versions (GTA Trilogy remaster) of GTA ViceCity, III and San Andreas are to be sold for a loss of 25as a result of bad reputation within the gaming community.

Python Code

```
##############################################################################
import numpy as np

array = np.random.randint(0,30,30)
print(array)

def profit(sellingPrice,costPrice):
    profit = sellingPrice - costPrice
    return profit

def loss(sellingPrice,costPrice):
    loss = costPrice - sellingPrice
    return loss

game = np.random.randint(1,3)

if __name__ == '__main__':
    print("game:",game)
    if game==1:
        costPrice,sellingPrice=2000,2500
        cost = profit(sellingPrice,costPrice)*array
        print((cost)+(10/100)*cost,"Total Profit")
    elif game==2:
        costPrice,sellingPrice = 3500,3999
        cost=profit(sellingPrice,costPrice)*array
```

```
        print((cost)+(10/100)*cost,"Total profit")
    else:
        costPrice,sellingPrice = 2500,2999
        cost = profit(sellingPrice,costPrice)*array
        print((cost)-(25/100)*(cost),"Total Profit")

################################################################################
```

Code output

```
[ 8  5  2 17 17 24 12  0 11 28 20 21 14  2 15  1 16  5  1 10 11 14  2 24
 27 16  4 28 25 15]
game: 1
[ 4400.  2750.  1100.  9350.  9350. 13200.  6600.     0.  6050. 15400.
 11000. 11550.  7700.  1100.  8250.   550.  8800.  2750.   550.  5500.
  6050.  7700.  1100. 13200. 14850.  8800.  2200. 15400. 13750.  8250.] Total Profit
```

2 Problem

Create an interactive APP like calculator, calendar etc using python for certain important applications in IoT

Python Code

```
################################################################################

# This function adds two numbers
def addition(x, y):
    return x + y

# This function subtracts two numbers
def subtraction(x, y):
    return x - y

# This function multiplies two numbers
def multiplication(x, y):
    return x * y

# This function divides two numbers
def division(x, y):
    return x / y


print("Select operation.")
print("1.Add")
print("2.Subtract")
print("3.Multiply")
print("4.Divide")
```

```
while True:
    # take input from the user
    choice = input("Enter any choice: ")

    # check if choice is one of the four options
    if choice in ('add', 'subtract', 'multiply', 'divide'):
        num1 = float(input("Enter first number: "))
        num2 = float(input("Enter second number: "))

        if choice == 'add':
            print(num1, "+", num2, "=", addition(num1, num2))

        elif choice == 'subtract':
            print(num1, "-", num2, "=", subtraction(num1, num2))

        elif choice == 'multiply':
            print(num1, "*", num2, "=", multiplication(num1, num2))

        elif choice == 'divide':
            print(num1, "/", num2, "=", division(num1, num2))

        next_calculation = input("Let's do next calculation? (yes/no): ")
        if next_calculation == "no":
          break

    else:
        print("Invalid Input")
################################################################################
```

Code output

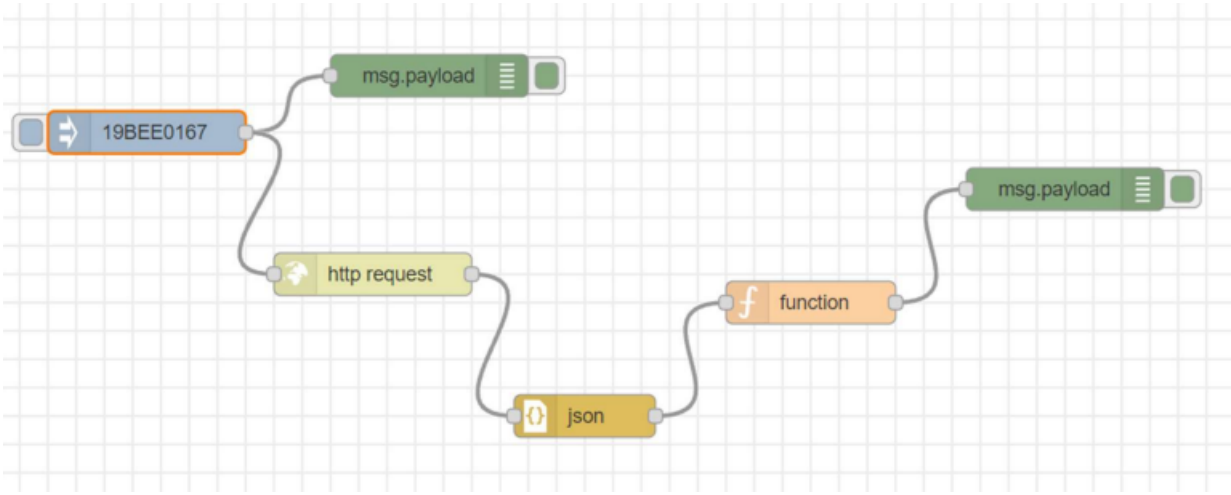
```
Select operation.
1.Add
2.Subtract
3.Multiply
4.Divide
Enter choice(1/2/3/4): 2
Enter first number: -3
Enter second number: -1
-3.0 - -1.0 = -2.0
```

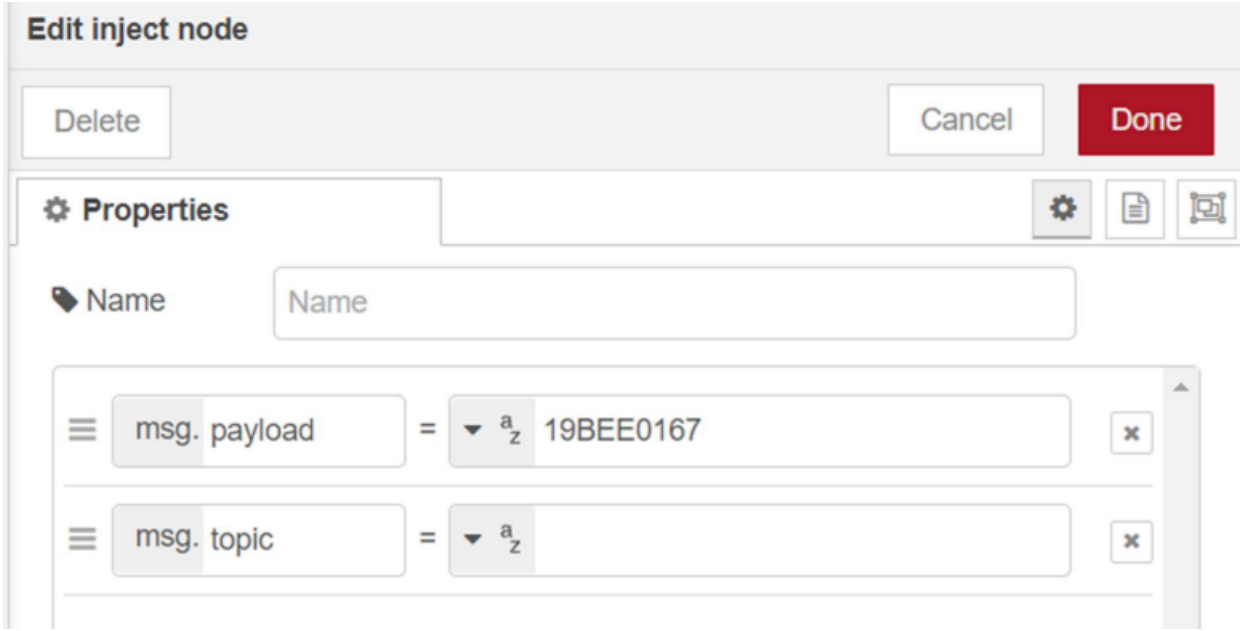
3 Problem

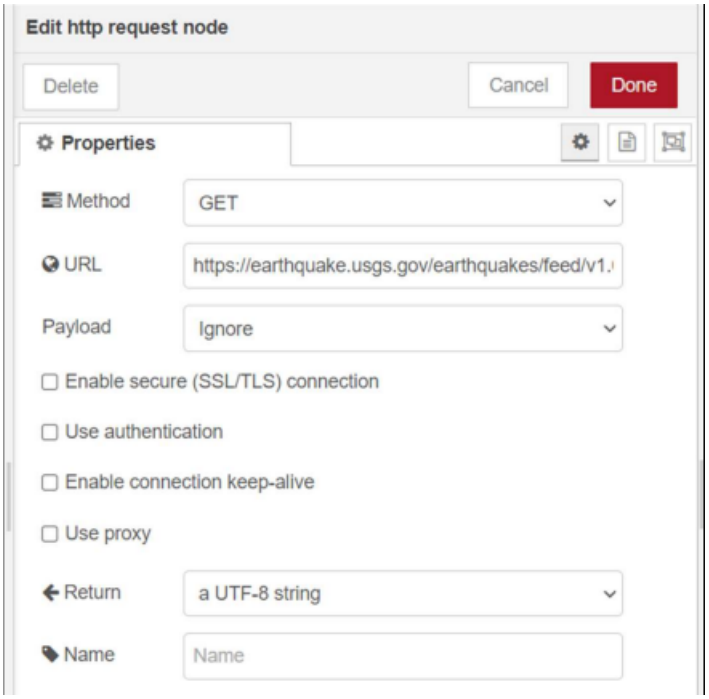
Online Monitoring system using IBM/Node Red

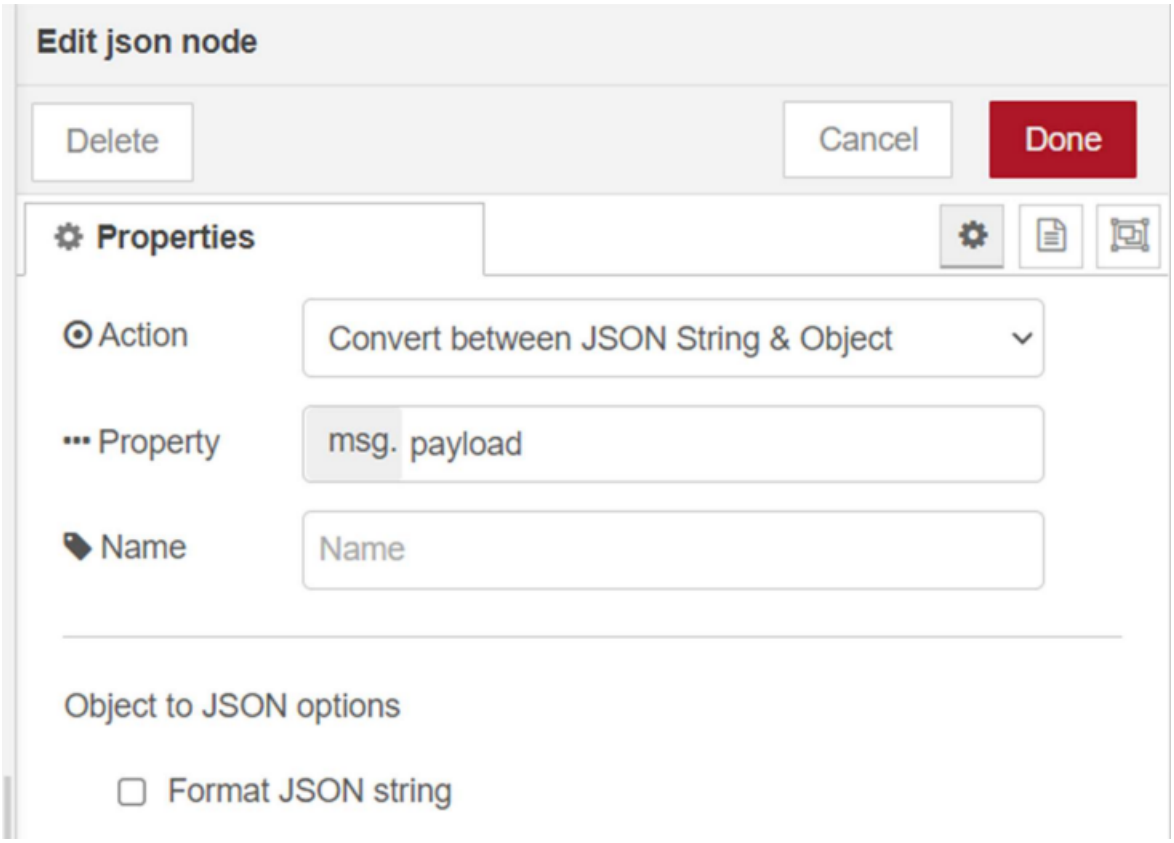
1. We will be reading the data from the given link - Earthquake JSON
2. We will display the messages with place, time and magnitude for the cases categorised with 'green' alert.

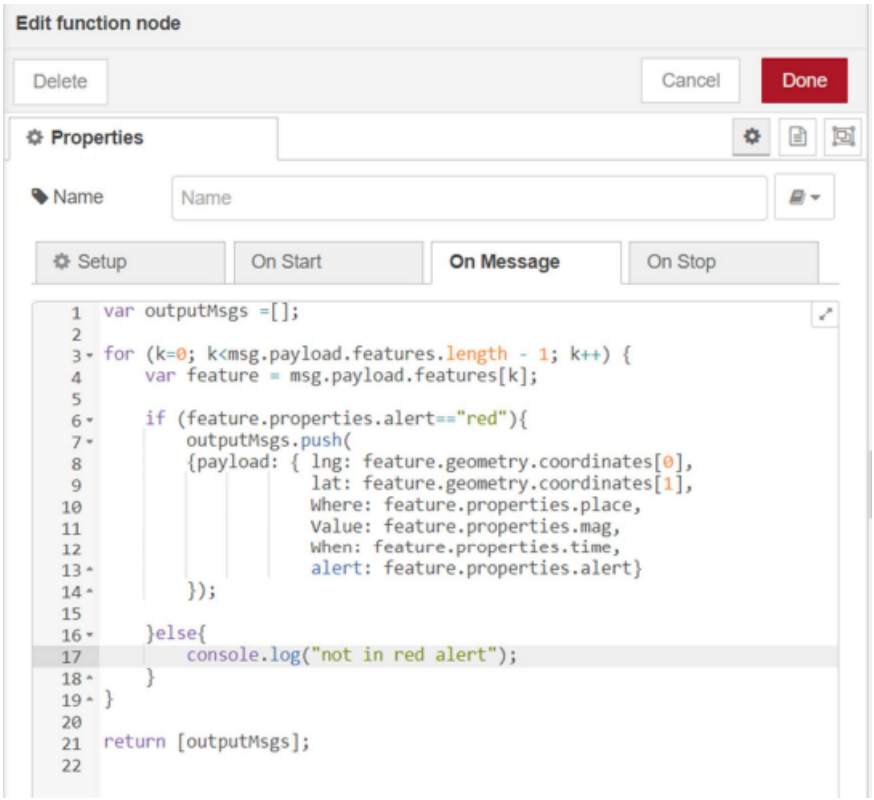
3. We will be using NodeRed for the data retrieval and display






Edit http request node
Delete
Cancel
Done
Properties
Method
GET
URL
https://earthquake.usgs.gov/earthquakes/feed/v1.
Payload
Ignore
Enable secure (SSL/TLS) connection
Use authentication
Enable connection keep-alive
Use proxy
Return
a UTF-8 string
Name
Name


Edit json node
Delete
Cancel
Done
Properties
Action
Convert between JSON String & Object
Property
msg.
payload
Name
Name
Object to JSON options
Format JSON string



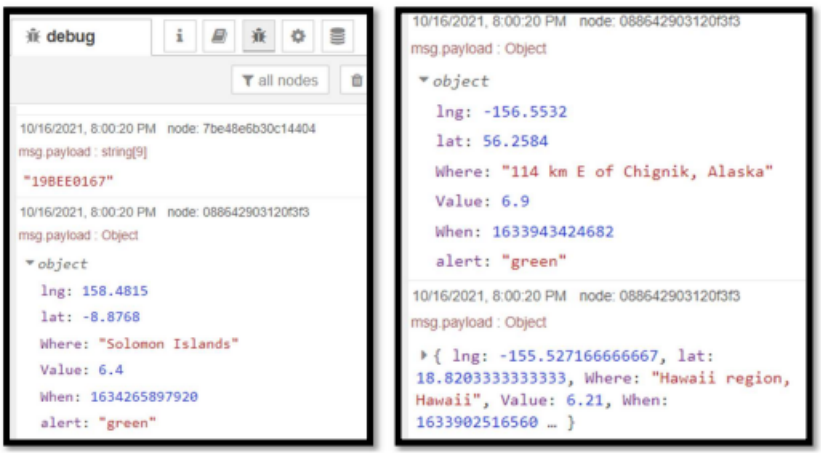
Function Code

```
#########################################################################################
var outputMsgs =[];
for (k=0; k<msg.payload.features.length - 1; k++) {
 var feature = msg.payload.features[k];

 if (feature.properties.alert=="red"){
 outputMsgs.push(
 {payload: { lng: feature.geometry.coordinates[0],
 lat: feature.geometry.coordinates[1],
 Where: feature.properties.place,
 Value: feature.properties.mag,
 When: feature.properties.time,
 alert: feature.properties.alert}
 });

 }else{
 console.log("not in red alert");
 }
}
return [outputMsgs];
#########################################################################################
```

Code output



Inference

1. Using Node Red we were able to successfully infer that the json file didn't consist of any red alert and to ensure that the code was working fine we were able to observe in the output window about the green alert entries.