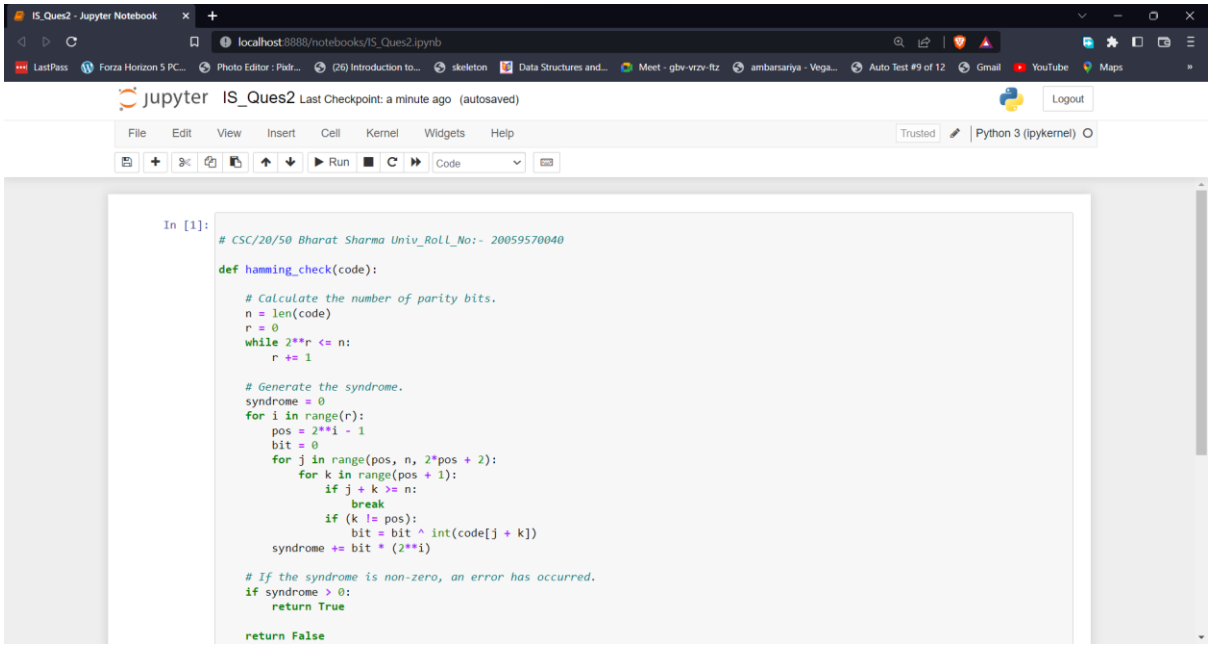
Ques 2. Implement the error detecting code.

Ans:-

```
# CSC/20/50 Bharat Sharma Univ_Roll_No:- 20059570040
def hamming_check(code):

    # Calculate the number of parity bits.
    n = len(code)
    r = 0
    while 2**r <= n:
        r += 1

    # Generate the syndrome.
    syndrome = 0
    for i in range(r):
        pos = 2**i - 1
        bit = 0
        for j in range(pos, n, 2*pos + 2):
            for k in range(pos + 1):
                if j + k >= n:
                    break
                if (k != pos):
                    bit = bit ^ int(code[j + k])
        syndrome += bit * (2**i)

    # If the syndrome is non-zero, an error has occurred.
    if syndrome > 0:
        return True

    return False
code = input("Enter code : ")

if hamming_check(code):
    print("Errors detected!")
else:
    print("No errors detected.")
```

OUTPUT:-


IS_Ques2 - Jupyter Notebook
localhost:8888/notebooks/IS_Ques2.ipynb
jupyter IS_Ques2 Last Checkpoint: a minute ago (autosaved)
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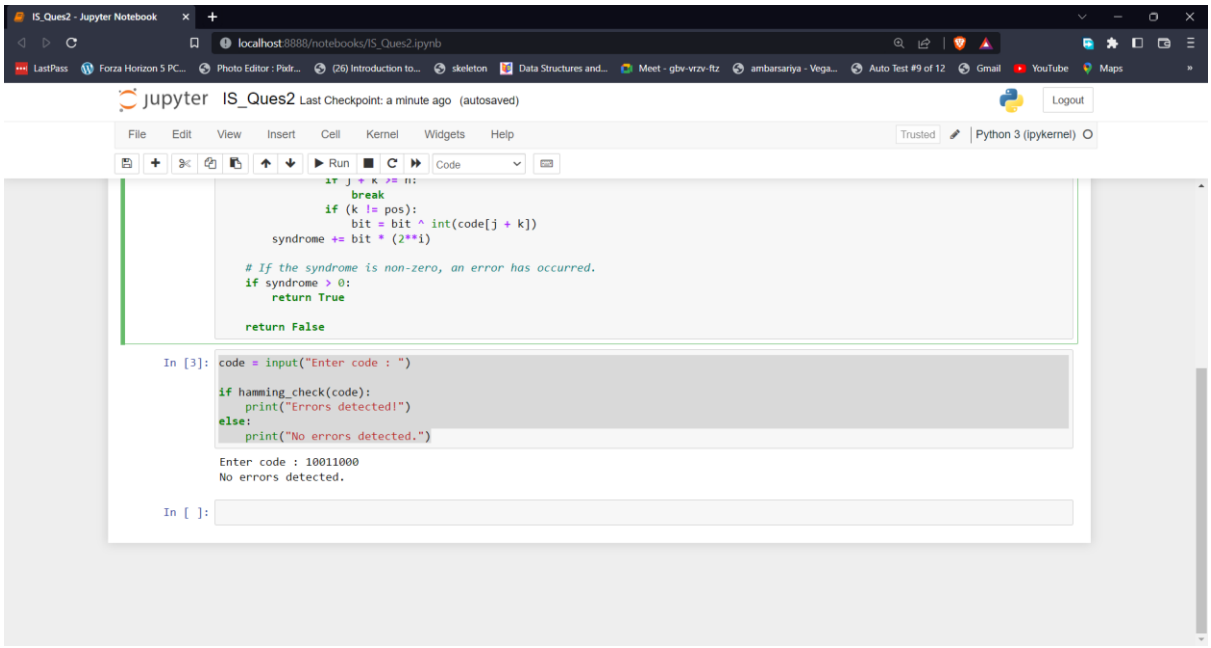
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Code
In [1]:
# CSC/20/50 Bharat Sharma Univ_Roll_No:- 20059570040
def hamming_check(code):
# Calculate the number of parity bits.
n = len(code)
r = 0
while 2**r <= n:
r += 1
# Generate the syndrome.
syndrome = 0
for i in range(r):
pos = 2**i - 1
bit = 0
for j in range(pos, n, 2*pos + 2):
for k in range(pos + 1):
if j + k >= n:
break
if (k != pos):
bit = bit ^ int(code[j + k])
syndrome += bit * (2**i)
# If the syndrome is non-zero, an error has occurred.
if syndrome > 0:
return True
return False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Python 3 (ipykernel)
Run
Code
break
if (k != pos):
bit = bit ^ int(code[j + k])
syndrome += bit * (2**i)
# If the syndrome is non-zero, an error has occurred.
if syndrome > 0:
return True
return False
In [3]:
code = input("Enter code : ")
if hamming_check(code):
print("Errors detected!")
else:
print("No errors detected.")
Enter code : 10011000
No errors detected.
In [ ]: