Homework #8

01286121 Computer Programming

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By

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1.

Code:

```
num = int(input("Enter an integer: "))
binary = ""

if num == 0:
    print("It is 0.")
elif num < 0:
    print("It is negative.")
else:
    #integer to binary
    quotient = num

    while quotient > 0:
        remainder = quotient % 2
        binary = str(remainder) + binary
        quotient //= 2

    print(f"Integer to binary: {binary}")

    #binary to integer
    count = 0
    integer = 0

    for i in reversed(binary):
        integer += int(i) * (2 ** count)
        count += 1

    print(f"Binary to integer: {integer}")
```

Result:

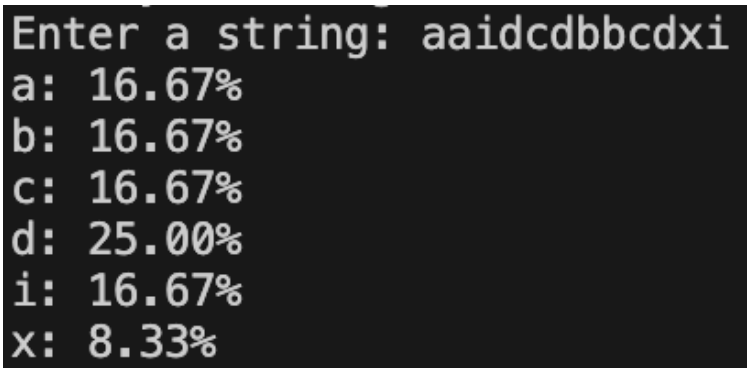
```
Enter an integer: 10
Integer to binary: 1010
Binary to integer: 10
```

2.

Code:

```
string = str(input("Enter a string: "))

count = {'a': 0, 'b': 0, 'c': 0, 'd': 0, 'e': 0, 'f': 0, 'g': 0,
    'h': 0, 'i': 0, 'j': 0, 'k': 0, 'l': 0, 'm': 0, 'n': 0,
    'o': 0, 'p': 0, 'q': 0, 'r': 0, 's': 0, 't': 0, 'u': 0,
    'v': 0, 'w': 0, 'x': 0, 'y': 0, 'z': 0}

for i in string:
    if i in count:
        count[i] += 1

for i in count:
    if count[i] == 0:
        continue
    else:
        percent = (count[i] / len(string)) * 100
        print(f"{i}: {percent:.2f}%")
```

Result:



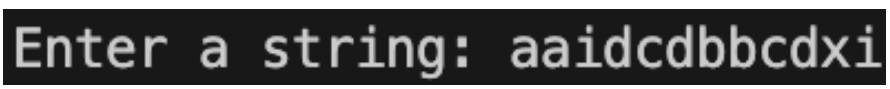
3.

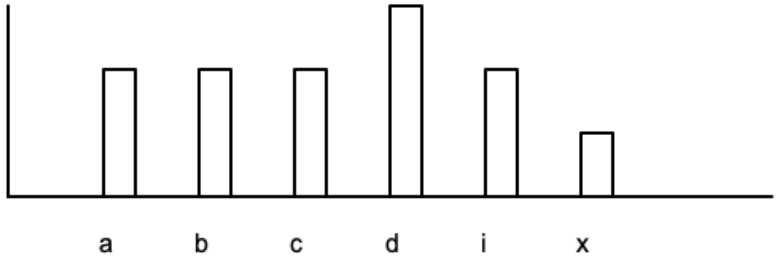
Code:

```
import turtle
string = str(input("Enter a string: "))

count = {'a': 0, 'b': 0, 'c': 0, 'd': 0, 'e': 0, 'f': 0, 'g': 0,
    'h': 0, 'i': 0, 'j': 0, 'k': 0, 'l': 0, 'm': 0, 'n': 0,
    'o': 0, 'p': 0, 'q': 0, 'r': 0, 's': 0, 't': 0, 'u': 0,
    'v': 0, 'w': 0, 'x': 0, 'y': 0, 'z': 0}

for i in string:
    if i in count:
        count[i] += 1

chars_used = 0
highest = 0
for i in count:
    if count[i] == 0:
        continue
    else:
        chars_used += 1
        if highest < count[i]:
            highest = count[i]

#draw graph
corner_x, corner_y = turtle.xcor(), turtle.ycor()
turtle.pd()
turtle.forward(chars_used * 40)
```

```
turtle.pu()
turtle.goto(corner_x, corner_y)
turtle.left(90)
turtle.pd()
turtle.forward(highest * 20)
turtle.pu()
turtle.goto(corner_x, corner_y)
turtle.right(90)

#draw graph bars
prev = 30
for i in count:
    if count[i] == 0:
        continue
    else:
        turtle.goto(prev, corner_y - 20)
        turtle.write(i)
        turtle.goto(prev, corner_y)
        turtle.left(90)
        turtle.pd()
        turtle.forward(count[i] * 20)
        turtle.right(90)
        turtle.forward(10)
        turtle.right(90)
        turtle.forward(count[i] * 20)
        turtle.left(90)
        turtle.pu()
        prev += 30

turtle.hideturtle()
turtle.done()
```

Result:





4.

Code:

```
ISBN_9 = str(input("Enter the first 9 digits of an ISBN-10 number: "))

ISBN_10th = 0
count = 1
for i in ISBN_9:
    ISBN_10th += int(i) * count
    count += 1

ISBN_10 = ISBN_9
if ISBN_10th % 11 == 10:
```

```
    ISBN_10 += "X"
else:
    ISBN_10 += str(ISBN_10th % 11)


print(f"Your ISBN-10 number is {ISBN_10}")
```

Result:

```
Enter the first 9 digits of an ISBN-10 number: 013601267
Your ISBN-10 number is 0136012671
```

```
Enter the first 9 digits of an ISBN-10 number: 013031997
Your ISBN-10 number is 013031997X
```