Code:

```
def gcd(x, y):
    "Function to find the GCD of 2 numbers"

    gcd = 1

    for i in range(2, min(x, y) + 1):
        if x % i == 0 and y % i == 0:
            if i > gcd:
                gcd = i

    return gcd


def isprime(x):
    "Function to check if the number is prime"

    if x <= 1:
        return False

    for i in range(2, x):
        if x % i == 0:
            return False

    return True


def main():

    p = 0
    q = 0

    while not isprime(p) or not isprime(q):
        p = int(input("Enter a prime number (p): "))
        q = int(input("Enter a prime number (q): "))
        if not isprime(q) or not isprime(p):
            print("Values entered are invalid")

    n = p * q

    phi_n = (p - 1) * (q - 1)

    e = 0
    for i in range(2, phi_n):
        if gcd(i, phi_n) == 1 and i not in [p, q]:
            e = i
```

```
            break

    d = 0
    for i in range(2, phi_n):
        if (e * i) % phi_n == 1:
            d = i
            break

    m = 2
    print("Initial Plain Text: ", m)

    cipher_text = (m**e) % n
    print("Cipher Text: ", cipher_text)

    plain_text = (cipher_text**d) % n

    print("Decrypted Plain Text: ", plain_text)


if __name__ == "__main__":
    main()
```

Output:

```
Enter a prime number (p): 12
Enter a prime number (q): 11
Values entered are invalid
Enter a prime number (p): 3
Enter a prime number (q): 11
Initial Plain Text:  2
Cipher Text:  29
Decrypted Plain Text:  2


...Program finished with exit code 0
Press ENTER to exit console.
```