1. **Run your program with each of the following input values: n = 30, 31, 487, 8893, 987654323, 131317171919.**

30: (2,3,5)

31: (31)

487: (487)

8893: (8893)

987654323: (987654323)

121217171919: (3,101,613,652621)

1. **For each pair of integers a and b that are listed here, use your program to compute gcd(a, b), and two integers x, and y such that d = ax + by. (a) a = 8,359, b = 4,962; (b) a = 95,243, b = 24,138.**

(a): 1

(b): 1

1. **Use your program to solve the equation 88243x + 16947y =1, for integers x and y (or to determine that such a solution does not exist).**

(a): The gcd is 1

1. **Run your program with the plaintext message P = 44, n = 1,517, and e = 49 and confirm the results.**

Answer: 1069

1. **Suppose that Bob adopts the RSA cryptosystem with primes p = 153,817 and q = 1,542,689, and public key encryption exponent e = 202, 404,606. If Alice uses this system to send Bob the plaintext message P = 888,999,000, apply your program to determine the ciphertext**

Answer: 202609913015

1. **Run your program with the ciphertext message C = 1069, n = 1,517, and d = 529 and confirm the results**

Answer: 44

1. **For the RSA system described in part (ii) of the previous program, compute Bob’s corresponding decryption exponent d. Apply your program to decrypt Alice’s ciphertext computed in part (ii) of the previous program.**

203179926992

1. **Explain why the RSA algorithm does not appear to work in part (ii), i.e. in decrypting Alice’s ciphertext.**

The RSA algorithm doesn’t work because we don’t know what the private key is, therefore we cannot decrypt the message to get the right answer