```
# 1.
lst = []

for i in range(1, 27):
  c = ""
  for j in range(0,i):
    c = c + chr(i+96)
  lst.append(c)

print(lst)
```

```
['a', 'bb', 'ccc', 'dddd', 'eeeee', 'ffffff', 'ggggggg', 'hhhhhhhh', 'iiiiiii
```

```
# 2.
def get_factors(num):
    factors = []
    for i in range(1, num + 1):
        if num % i == 0:
            factors.append(i)
    return factors

def main():
    try:
        num = int(input("Enter an integer: "))
        if num <= 0:
            print("Please enter a positive integer.")
            return
        factors = get_factors(num)
        print("Factors of", num, "are:", factors)
    except ValueError:
        print("Invalid input. Please enter a valid integer.")

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

```
Enter an integer: 112
Factors of 112 are: [1, 2, 4, 7, 8, 14, 16, 28, 56, 112]
```

```
# 3.
result = []
ones_count = 1
for i in range(20):
    for j in range(ones_count):
        result.append(1)
    ones_count += 1
    result.append(0)
print(result)
```

```
[1, 0, 1, 1, 0, 1, 1, 1, 0, 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1,
```

```
# 4.
import random
sequence = []
def define_sequence():
    for i in range(0,100):
        sequence.append(random.randint(0,1))
    print(sequence)
    return sequence
define_sequence()
def sequence_count():
    zero_count = 0
    max_zero_count = 0
    for i in sequence:
      if i == 0:
        zero_count += 1
        max_zero_count += 1
      else:
        zero_count = 0
        if i == 0:
          zero_count += 1
          if zero_count > max_zero_count:
            max_zero_count = zero_count
    return max_zero_count
print(sequence_count())
```

```
[1, 1, 1, 0, 1, 1, 0, 1, 0, 0, 1, 0, 1, 1, 0, 0, 0, 1, 1, 1, 1, 1, 1, 1, 1, 0,
41
```

```
# 5.
def remove_duplicates(input_list):
    unique_list = []
    for item in input_list:
        if item not in unique_list:
            unique_list.append(item)
    return unique_list

def main():
    try:
        input_list = input("Enter a list of elements separated by space
        input_list = [int(x) for x in input_list]  # Convert input elem
        unique_list = remove_duplicates(input_list)
        print("List with duplicates removed:", unique_list)
    except ValueError:
        print("Invalid input. Please enter integers separated by spaces

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

```
Enter a list of elements separated by spaces: 1 1 2 3 4 3 0 0
List with duplicates removed: [1, 2, 3, 4, 0]
```