## Evidence 1

```python
# task 1.1

###      MAIN PROGRAM      ###
def main():
    freq_store = []          # store as array of tuples (x_value, freq)
    counter = 0              # counts number of X values
    while True:              # repeats until ZZZ is typed in
        x_value = input("Next X value ... <ZZZ to END> ")
        if x_value == "ZZZ":
            break            # exit out of loop and process
        if counter == 6:
            break            # exit out of loop and process
        # ask for frequency
        while True:
            freq = input("Frequency ... ")
            if freq.isdigit():              # is a number
                freq = int(freq)
                if freq >= 0 and freq <= 60: # within range
                    break                    # break out of loop
                else:
                    # print error message
                    print("Error: Frequency entered out of range [0, 60]")
                    print("Enter an integer between 0 and 60.")
                    print()
            else:
                    # print error message
                print("Error: Frequency entered not an integer.")
                print("Enter an integer between 0 and 60.")
                print()

        freq_store.append((x_value, freq))  # add to freq_store array
        counter += 1                        # increment counter

    ###   DATA PROCESSING   ###
    print()                              # heading
    print("+" * 30)
    print("Frequency distribution")
    print("+" * 30)

    for data_tuple in freq_store:
        x_value = data_tuple[0]
        freq    = data_tuple[1]
        print("  {0:<10}{1}".format(x_value, "@" * freq))
```

## Evidence 2

```
>>>
==================== RESTART: D:\18S24\PC13\pc13.py ====================
>>> main()
Next X value ... <ZZZ to END> XS
Frequency ... 12
Next X value ... <ZZZ to END> S
Frequency ... 22
Next X value ... <ZZZ to END> M
Frequency ... 45
Next X value ... <ZZZ to END> L
Frequency ... 56
Next X value ... <ZZZ to END> XL
Frequency ... 39
Next X value ... <ZZZ to END> XXL
Frequency ... 11
Next X value ... <ZZZ to END> ZZZ


++++++++++++++++++++++++++++++
Frequency distribution
++++++++++++++++++++++++++++++
  XS        @@@@@@@@@@@@
  S         @@@@@@@@@@@@@@@@@@@@@@
  M         @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
  L         @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
  XL        @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
  XXL       @@@@@@@@@@@
>>>
```

## Evidence 3

```python
# task 1.2

###     MAIN PROGRAM      ###
def main():
    freq_store = []         # store as array of tuples (x_value, freq)
    max_freq = 0            # maximum frequency (width: 80)
    counter = 0             # counts number of X values
    while True:             # repeats until ZZZ is typed in
        x_value = input("Next X value ... <ZZZ to END> ")
        if x_value == "ZZZ":
            break           # exit out of loop and process
        if counter == 6:
            break           # exit out of loop and process
        # ask for frequency
        while True:
            freq = input("Frequency ... ")
            if freq.isdigit():              # is a number
                freq = int(freq)
                if freq >= 0 and freq <= 60: # within range
                    break                    # break out of loop
                else:
                    # print error message
                    print("Error: Frequency entered out of range [0, 60]")
                    print("Enter an integer between 0 and 60.")
                    print()
            else:
                # print error message
```

```python
                print("Error: Frequency entered not an integer.")
                print("Enter an integer between 0 and 60.")
                print()

        if freq > max_freq:
            max_freq = freq                      # set maximum frequency

        freq_store.append((x_value, freq))  # add to freq_store array
        counter += 1                             # increment counter

    ###   DATA PROCESSING   ###
    print()                                      # heading
    print("+" * 30)
    print("   Frequency distribution")
    print("+" * 30)
    print()

    for data_tuple in freq_store:
        x_value = data_tuple[0]
        freq    = data_tuple[1]

        # print five lines each (6 * (5 lines + 1 space) + 4 for heading = 40)
        print("    {0:<16}{1}".format("", chr(9608) * freq))
        print("    {0:<16}{1}".format("", chr(9608) * freq))
        print("    {0:<16}{1}".format(x_value, chr(9608) * freq))
        print("    {0:<16}{1}".format("", chr(9608) * freq))
        print("    {0:<16}{1}".format("", chr(9608) * freq))

        # chr(9608) is a shaded box character.

        # print newline to separate X values
        print()
```

## Evidence 4

```
>>> main()
Next X value ... <ZZZ to END> XS
Frequency ... 12
Next X value ... <ZZZ to END> S
Frequency ... 22
Next X value ... <ZZZ to END> M
Frequency ... 45
Next X value ... <ZZZ to END> L
Frequency ... 56
Next X value ... <ZZZ to END> XL
Frequency ... 39
Next X value ... <ZZZ to END> XXL
Frequency ... 11
Next X value ... <ZZZ to END> ZZZ
```

```
++++++++++++++++++++++++++++++
    Frequency distribution
++++++++++++++++++++++++++++++



      XS




      S




      M




      L




      XL




      XXL


>>>
```

## Evidence 5

```
# task 1.3

###     MAIN PROGRAM     ###
def main():
    freq_store = []          # store as array of tuples (x_value, freq)
    max_freq = 0             # maximum frequency (width: 80)
    counter = 0             # counts number of X values
    while True:             # repeats until ZZZ is typed in
        x_value = input("Next X value ... <ZZZ to END> ")
        if x_value == "ZZZ":
            break            # exit out of loop and process
        if counter == 6:
```

```python
            break                # exit out of loop and process
        # ask for frequency
        while True:
            freq = input("Frequency ... ")
            if freq.isdigit():                    # is a number
                freq = int(freq)
                if freq >= 0:                # within range
                    break                    # break out of loop
                else:
                    # print error message
                    print("Error: Frequency entered must be 0 or a positive
integer.")
                    print()
            else:
                # print error message
                print("Error: Frequency entered must be 0 or a positive
integer.")
                print()

        if freq > max_freq:
            max_freq = freq                    # set maximum frequency

        freq_store.append((x_value, freq))  # add to freq_store array
        counter += 1                        # increment counter

    ###   DATA PROCESSING   ###
    print()                                    # heading
    print("+" * 30)
    print("   Frequency distribution")
    print("+" * 30)
    print()

    # 60 = 80 total - 20 used for labelling at the start of the line
    # scaling will only be used if max_freq > 60.
    if max_freq > 60:
        freq_scale = 60 / max_freq
    else:
        freq_scale = 1                # normal scale

    for data_tuple in freq_store:
        x_value = data_tuple[0]
        freq    = data_tuple[1]

        # print five lines each (6 * (5 lines + 1 space) + 4 for heading = 40)
        print("    {0:<16}{1}".format("", chr(9608) * round(freq * freq_scale)))
        print("    {0:<16}{1}".format("", chr(9608) * round(freq * freq_scale)))
        print("    {0:<16}{1}".format(x_value, chr(9608) * round(freq *
freq_scale)))
        print("    {0:<16}{1}".format("", chr(9608) * round(freq * freq_scale)))
        print("    {0:<16}{1}".format("", chr(9608) * round(freq * freq_scale)))

        # chr(9608) is a shaded box character.

        # print newline to separate X values
        print()

    # print horizontal axis
    print("{0:<19}|{1}".format("", "---------|" * 6))
```

```python
    h_labels = "{0:16}".format("")  # a string containing labels

    # if scaling is required
    if max_freq > 60:
        for i in range(7):            # from 0 to 6 inclusive
            h_labels += "{0:>6.2f}{1:<4}".format(max_freq * i / 6, "")
    else:
        for i in range(7):            # from 0 to 6 inclusive
            h_labels += "{0:>6.2f}{1:<4}".format(60 * i / 6, "")

    print(h_labels)
```

## Evidence 6

### Dataset 1

```
>>> main()
Next X value ... <ZZZ to END> XS
Frequency ... 12
Next X value ... <ZZZ to END> S
Frequency ... 22
Next X value ... <ZZZ to END> M
Frequency ... 45
Next X value ... <ZZZ to END> L
Frequency ... 56
Next X value ... <ZZZ to END> XL
Frequency ... 39
Next X value ... <ZZZ to END> XXL
Frequency ... 11
Next X value ... <ZZZ to END> ZZZ

++++++++++++++++++++++++++++++
   Frequency distribution
++++++++++++++++++++++++++++++
```



```
      |---------|---------|---------|---------|---------|---------|
     0.00     10.00     20.00     30.00     40.00     50.00     60.00
>>>
```
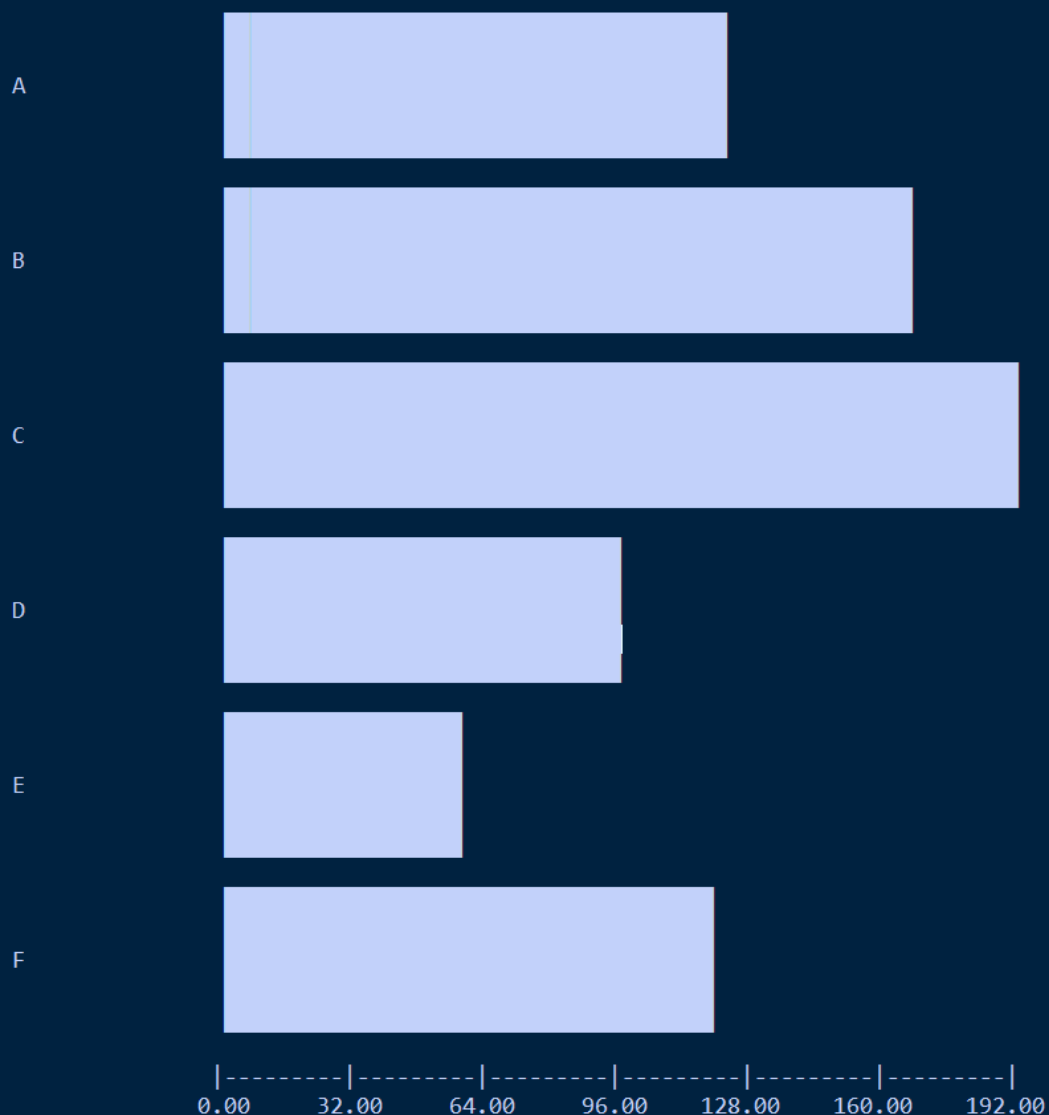
## Dataset 2

```
>>> main()
Next X value ... <ZZZ to END> A
Frequency ... 121
Next X value ... <ZZZ to END> B
Frequency ... 168
Next X value ... <ZZZ to END> C
Frequency ... 192
Next X value ... <ZZZ to END> D
Frequency ... 97
Next X value ... <ZZZ to END> E
Frequency ... 56
Next X value ... <ZZZ to END> F
Frequency ... 118
Next X value ... <ZZZ to END> ZZZ


++++++++++++++++++++++++++++++
   Frequency distribution
++++++++++++++++++++++++++++++
```



```
      |---------|---------|---------|---------|---------|---------|
     0.00     32.00     64.00     96.00    128.00    160.00    192.00
>>>
```

## Dataset 3

```
>>> main()
Next X value ... <ZZZ to END> 1st
Frequency ... 600
Next X value ... <ZZZ to END> 2nd
Frequency ... 499
Next X value ... <ZZZ to END> 3rd
Frequency ... 115
Next X value ... <ZZZ to END> 4th
Frequency ... 577
Next X value ... <ZZZ to END> 5th
Frequency ... 47
Next X value ... <ZZZ to END> 6th
Frequency ... 335
Next X value ... <ZZZ to END> ZZZ

++++++++++++++++++++++++++++++
   Frequency distribution
++++++++++++++++++++++++++++++
```



```
          |---------|---------|---------|---------|---------|---------|
         0.00    100.00    200.00    300.00    400.00    500.00    600.00
>>>
```