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**Batch:** B

**Course Code :** OECS4

**Experiment No.:** 10

**Name of the Experiment :** Screen Complexity

**Aim**: To calculate screen complexity of existing Graphical User Interface and redesign the interface to minimize the screen complexity.

**Theory**:

In GUI design, the key elements of complexity are size, local density, grouping, and alignment, which are considered significant influences on screen usability. The aggregate complexity is the weighted average of these key elements’ ratings, where the weight given is the element’s subjective level of importance. Most websites keep the aim at keeping the design aesthetically pleasing and ease-of-use for users. But while designing, it is also important to pay attention to the screen’s complexity. If the components on the UI are not adequately aligned, the screen appears clustered or inefficient to use. This decreases user’s

confidence.

The basic formula for calculating the screen complexity is:

Where,

C: the complexity of the system in bits

N: total number of events (widths or heights)

m: number of event classes (number of unique widths or heights)

Pn

: the probability of occurrence of the nth event class ( based on the frequency of events within the class)

Procedure:

● We take a screen and find the total number of fields, vertical alignment

points and horizontal alignment points for that particular screen.

● Then we calculate the common vertical and common horizontal alignment

values.

● By using the formula , we calculate the complexity of a screen using the

above information (vertical and horizontal alignment points) and add those

complexities to get the final screen complexity.

**Implementation:**

**Old frame :**

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number of elements : 22

number of vertical alignment points : 11

number of horizontal alignment points : 12

common vertical

6\*1/22

2\*2/22

3\*4/22

common horizontal

5\*1/22

4\*2/22

3\*3/22

Screen Complexity By Vertical:

C1 = -22 \* { 6 \* (1/22) \* log2(2/22) + 2 \* (2/22) \* log2(2/22) + 3 \* (4/22) \* log2(4/22)}

C1 = -22 \* {-1.21 -0.628 -1.34}

C1 = ~70 bits

Screen Complexity By Horizontal:

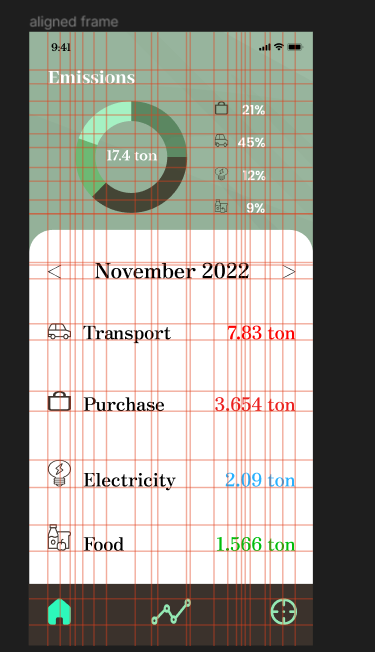
C2 = -22 \* { 5 \* (1/22) \* log2(1/22) + 4 \* (2/22) \* log2(2/22) + 3 \* (3/22) \* log2(3/22) }

C2 = -22 \* {-1.01 -1.26 -1.17}

C2 = 76 bits

C = C1 + C2 = 70 + 76 = 146 bits

**Modified Frame:**

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number of elements : 22

number of vertical alignment points : 8

number of horizontal alignment points : 8

common vertical

4\*1/22

3\*4/22

1\*6/22

common horizontal

1\*4/22

3\*2/22

4\*3/22

Screen Complexity By Vertical:

C1 = -22 \* { 4 \* (1/22) \* log2(1/22) + 3 \* (4/22) \* log2(4/22) + 1 \* (6/22) \* log2(6/22)}

C1 = -22 \* {-0.18 -0.51 -1.34}

C1 = ~45 bits

Screen Complexity By Horizontal:

C2 = -22 \* { 1 \* (4/22) \* log2(4/22) + 3 \* (2/22) \* log2(2/22) + 4 \* (3/22) \* log2(3/22) }

C2 = -22 \* {-0.45 -0.94 -1.57}

C2 = 65 bits

C = C1 + C2 = 45 + 65 = 110 bits

**Conclusion :**

In this experiment, we considered the screen for the UI of reduced co2 experiment and then we analyzed it to calculate the screen complexity for a particular screen. The screen complexity was reduced by aligning the elements and combining some elements together.

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| Sr.No. | Principles | Poor | Average Good | Very  good | Excellent |
| --- | --- | --- | --- | --- | --- |
| 1 | Aesthetically pleasing |  |  |  |  |
| 2 | Compatibility |  |  |  |  |
| 3 | Comprehensibility |  |  |  |  |
| 4 | Consistency |  |  |  |  |
| 5 | Control |  |  |  |  |
| 6 | Efficiency |  |  |  |  |
| 7 | Flexibility |  |  |  |  |
| 8  9  10 | Forgiveness  Recovery  Responsiveness |  |  |  |  |