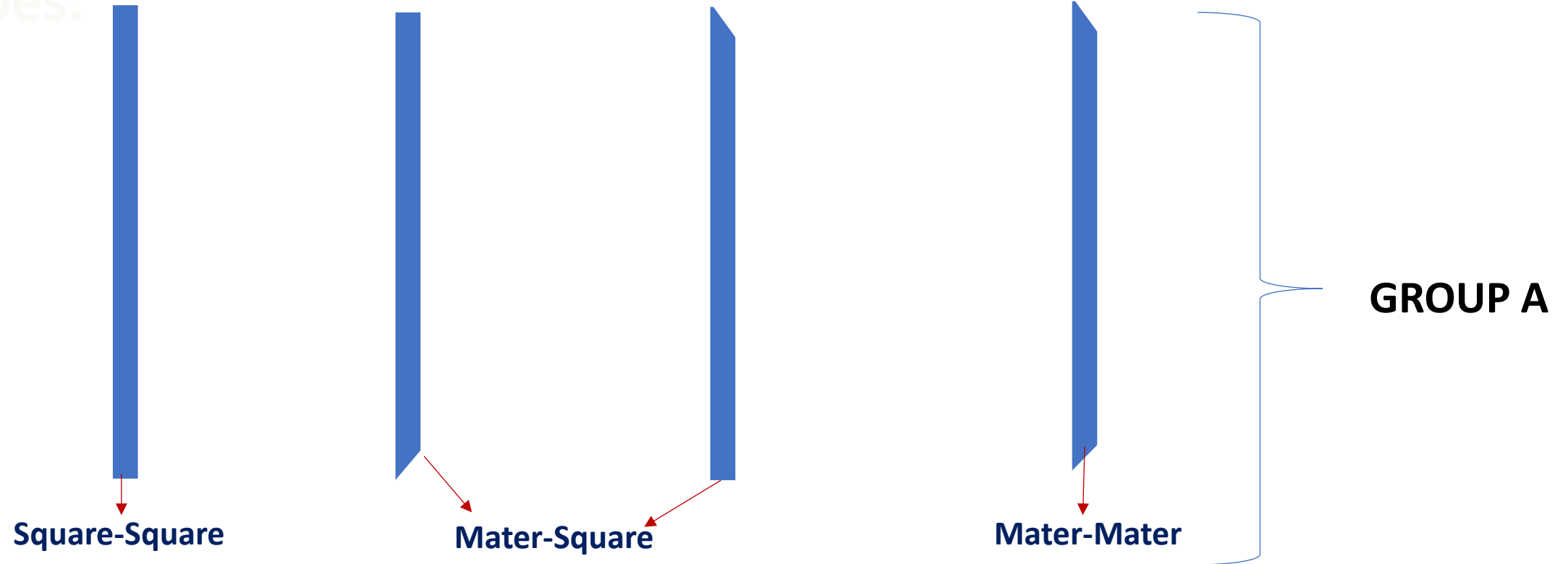# Workshop

Hii inafanyakazi katika workshop za kutengeneza window, door, fixed, na partition kwa material tofauti tofauti kama vile uPVC, Aluminium, metal, wood etc. user lazima a achori/design style ya item husika, hiyo ndio inashikaniswa na vipimo halisi. kumbuka style ni reusable ya projects yani user anatengeneza style zake au anapokea kutoka kwa mwingine hiyo anatumia baadae yani ni reuseble, then user akipata project yeye ana weka kipimo halisi cha dirisha/mlango etc, na kuchagua aina ya style husika kupitia style na vipimo system inakuwa na uwezo wa kujua dirisha hiyo ina kipande kipi wapi size gani?,
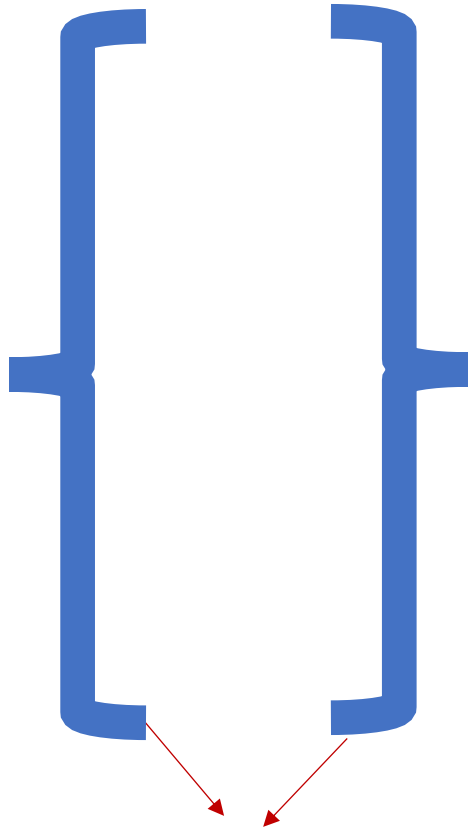
Design style properity

LINE Endpoint Types:

Square-Square

Mater-Square

Mater-Mater

GROUP A

Characters:

    1: they rotate each side inoder to fulfilling drawings.

    2: they carries values such as named, formular, which material it is, is frame, is width or height, offcut.
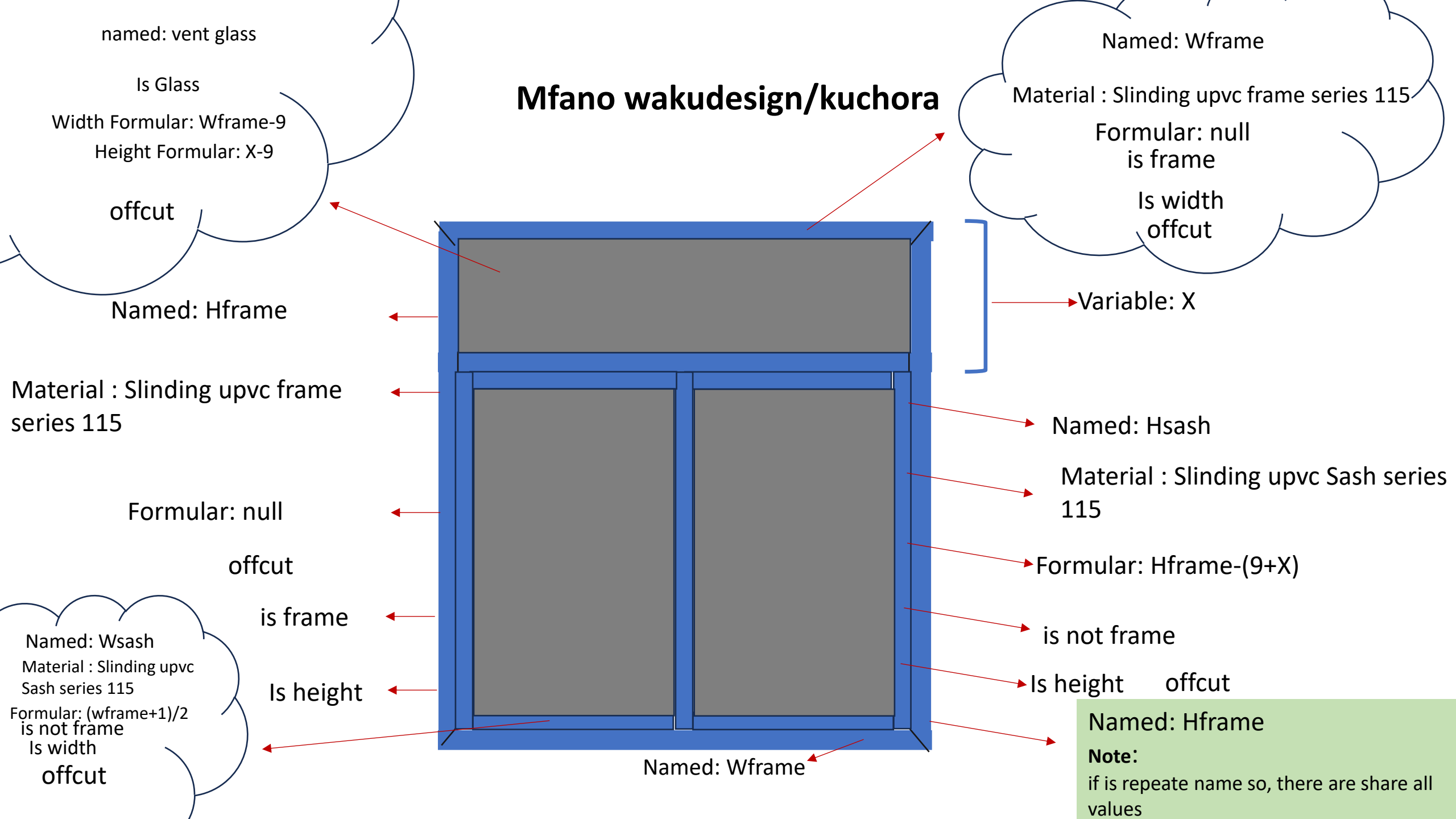
GROUP B

Variable gauge

Shapes (areas use for glass or boards or panels)

Characters:

    1: they rotate each side inoder to fulfilling drawings.

    2: Shape carries values such as named, is Glass or Board or Panel, width formular, height formular.

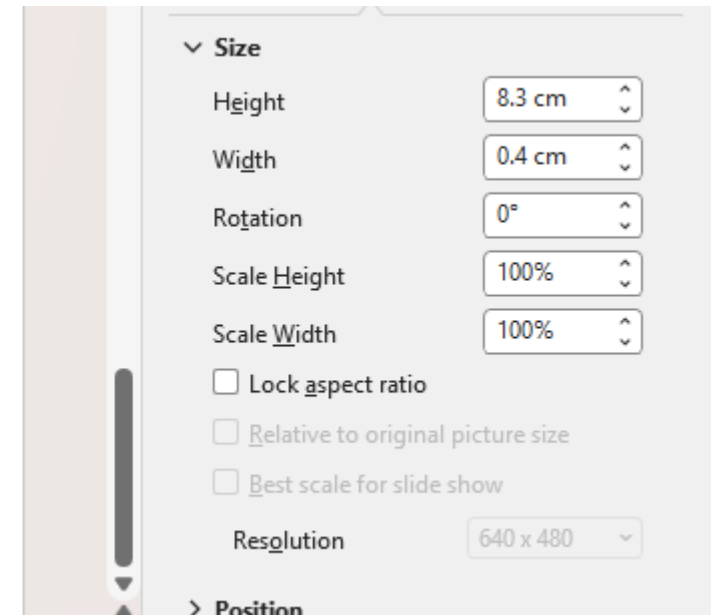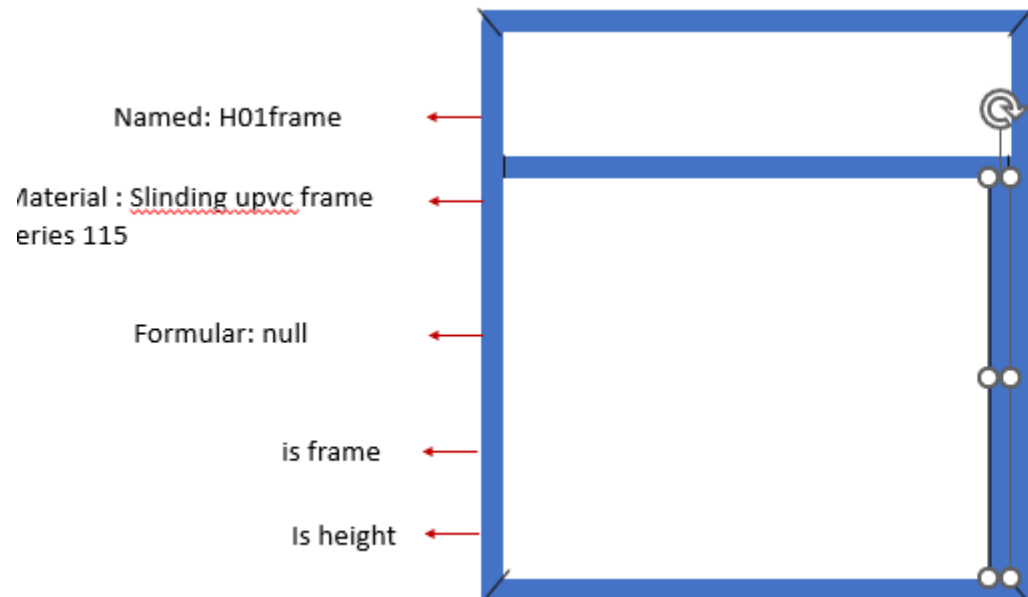   3. Variable gauge hii ina named variable either X,Y,Z

Mfano wakudesign/kuchora

named: vent glass

Is Glass

Width Formular: Wframe-9
Height Formular: X-9

offcut

Named: Hframe

Material : Slinding upvc frame series 115

Formular: null

offcut

is frame

Named: Wsash
Material : Slinding upvc Sash series 115
Formular: (wframe+1)/2
is not frame
Is width

offcut

Is height

Named: Wframe

Named: Wframe

Material : Slinding upvc frame series 115

Formular: null
is frame

Is width
offcut

Variable: X

Named: Hsash

Material : Slinding upvc Sash series 115

Formular: Hframe-(9+X)

is not frame

Is height   offcut

Named: Hframe

Note:
if is repeate name so, there are share all values

NOTE:

Offcut: `ni size` **kusawazisha ncha** ya profile kabla ya kukata maiter mpya. Hii ni lazima kwa sababu baada ya kukata maiter ya kwanza, ncha iliyobaki inakuwa na pembe (angle) — haiwezi kutumika moja kwa moja kukata maiter nyingine.

```
hiyo ni mchora unayo wakilisha style moja hivyo eneo lakuchorea linapaswa kuwa
flexiable pia kuwe na grid yakupima size yaeneo hili kuchora vema pia lines na
shapes ziwe zina wekwa kwa kuput urefu, upana, angle etc wa mchoro mfano mdogo ona
hapo kwenye picha.
```


Named: H01frame

Material : Slinding upvc frame eries 115

Formular: null

is frame

Is height

- ∨ Size
- Height — 8.3 cm
- Width — 0.4 cm
- Rotation — 0°
- Scale Height — 100%
- Scale Width — 100%
- ☐ Lock aspect ratio
- ☐ Relative to original picture size
- ☐ Best scale for slide show
- Resolution — 640 x 480
- \> Position

System inavyo tumia hizo value kupata size za kukata

system inapokea style Pamoja na dimension zake mfano imepokea width ni 170 na height ni 250 **(170x250).**
kama style ina variable gauge user lazima aweke input value ya value hisika hivyo X=59
system inachakata inaamngalia kwenye style line ambayo ina value is frame && formular is null kisha
kama width inaipa 170 na kama ni height inaipa 250 hivyo Hframe ni 250 while Wframe ni 170. system
inaipa value named zote kulingana na fomular husika hivyo:

Cutting list of Slinding upvc frame series 115
1Hframe = 250 - cut 2pc
2Wframe = 170 - cut 2pc

Cutting list of Slinding upvc sash series 115
1Hsash = 250-(9+59) = 182 - cut 4pc
2Wsash = (170+1)/2 = 85.5 - cut 4pc

Cutting list of Glass (is glass)
1vent glass : W=170-9 = 161, H=59-9=50, (161x50) - cut 1pc
2sash glass : W=182-6.5=175.5, H=85.5-6.5=79, (175.5x79) - cut 2pc

NOTE:
1. line au shape ikirudia named inamaanisha hiyo ni the same values. hivyo katika style user akiweka
   value ya named ikafanana na ya awali hiyo ndio inatoa idadi ya cut pc zinazofanana.
2. Kumbuka project inaweza kuwa na multiple windows, doors etc ambazo ni style tofauti tofauti. mfano
   huo ni dirisha moja na style moja.

CUTTING OPTIMIZATION (BFD + OFFCUT)
Kwa Profiles Tofauti kutoka Inventory

1.DATA MUHIMU KWENYE SYSTEM

Kila Profile kwenye inventory lazima iwe na:
•profile_type (mfano: Frame, Sash, Mullion, Bead n.k.)
•stock_length (mfano: 5800 mm au 6000 mm)
•offcut_length (mfano: 5 mm au 10 mm)
•kerf_width (unene wa blade kama unahesabu)
•specification nyingine (rangi, series, thickness n.k.)
Cut list piece inakuja na:
•profile_type
•required_length
•quantity

2.HATUA YA SYSTEM KUFANYA OPTIMIZATION
STEP 1 – Grouping
System inagawa cut list kwa profile_type.
Kila profile ina optimization yake tofauti.
Mfano:
Frame profile → optimize peke yake
Sash profile → optimize peke yake
Haziwezi kuchanganywa.

step2- **Pata Specification Kutoka Inventory na style**
Kwa kila profile_type:
System inachukua:
•stock_length
•Offcut – value kutoka style
•kerf
kutoka kwenye inventory/profile specification.
Hii inafanya system iwe dynamic — sio hardcoded 580 kila wakati.

STEP 3 – Sort Pieces (Decreasing)
Kwa kila profile group:
Panga vipande kuanzia vikubwa kwenda vidogo.

STEP 4 – Best Fit Decreasing Logic

Kwa kila piece:

A. Tafuta frame zote za profile hiyo zinazotosha.

Sheria ya kutosha:

Kama frame ni mpya:

remaining >= piece_length

Kama frame tayari imeshakatwa:

remaining >= piece_length + offcut (+ kerf kama ipo)

B. Chagua frame itakayobaki na nafasi ndogo zaidi baada ya kukata.

C. Kama hakuna inayotosha:

fungua stock mpya kutoka inventory.

STEP 5 – Hesabu ya Kukata

Frame mpya:

remaining = stock_length - piece_length

Frame iliyokatwa tayari:

remaining = remaining - offcut - piece_length (- kerf)

System yako haitakata tu "frame 580".
Inafanya hivi:
1.Inasoma profile kutoka cut list
2.Inaangalia specification yake kwenye inventory
3.Ina-run BFD + Offcut kwa profile hiyo pekee
4.Inaendelea kwa profile nyingine