

Advanced Techniques with Interactive Gantt Charts

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Gantt Chart - original meaning

https://en.wikipedia.org/wiki/Henry_Gantt

Henry Gantt

ArticleTalk

ReadEditView historyTools

From Wikipedia, the free encyclopedia

For the Confederate States Army officer, see [Henry Gantt \(colonel\)](#). For the American baseball player, see [Henry Gant](#).

Henry Laurence Gantt (/ɡænt/; May 20, 1861 – November 23, 1919) was an American [mechanical engineer](#) and [management consultant](#) who is best known for his work in the development of [scientific management](#). He created the [Gantt chart](#) in the 1910s.

Gantt charts were employed on major infrastructure projects including the [Hoover Dam](#) and [Interstate highway](#) system and continue to be an important tool in [project management](#) and [program management](#).

Gantt is also recognized as an early proponent of the [social responsibility](#) of businesses.

Biography

Early life, education and family

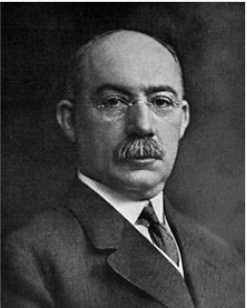
Gantt was born to a prosperous plantation family in [Calvert County, Maryland](#) at the outbreak of the [American Civil War](#). When the war ended the family lost their slaves and land and moved to [Baltimore](#).^[1]

He graduated from [McDonogh School](#) in 1878 and from [Johns Hopkins University](#) in 1880, and then returned to the McDonogh School to teach for three years. He subsequently received a Master of Engineering degree in mechanical engineering from the [Stevens Institute of Technology](#) in [New Jersey](#).^[2] Henry Gantt married Mary E. Snow of [Fitchburg, Massachusetts](#) on 29 Nov 1899.

Career

In 1884, Gantt began working as a [draughtsman](#) at the iron foundry and machine-shop

Henry Gantt



Born

Nationality

Citizenship

Alma mater

Known for

Fields

Henry L. Gantt, 1916

Henry Laurence Gantt

May 20, 1861

Calvert County, Maryland, U.S.

November 23, 1919 (aged 58)

Montclair, New Jersey, U.S.

American

United States

Johns Hopkins University (A.B.)

Stevens Institute of Technology (M.E.)

Gantt chart

Scientific career

Scientific management

https://en.wikipedia.org/wiki/Henry_Wallace_Clark

Henry Wallace Clark

ArticleTalk

ReadEditView historyTools

From Wikipedia, the free encyclopedia

Henry Wallace Clark (July 27, 1880 – April 7, 1948) was an American [consulting engineer](#), known for popularizing the work of [Henry Gantt](#) with his 1922 work "The Gantt chart; a working tool of management".^{[1][2]}

In 1934 he was awarded the [Henry Laurence Gantt Medal](#) by the [ASME](#).^[3] A year after his death the [Wallace Clark Award](#) was initiated, an award for distinguished contribution to [scientific management](#) in the international field.

Biography

Youth and early career

Born in [Cincinnati, Ohio](#) to William Allen Clark and Mary Ann Clark (born Rankin), Clark attended the local schools, and graduated in 1902 from the [University of Cincinnati](#).^[4]

After graduation Clark started his career as assistant manager at the Machine Tool Co. of Cincinnati, and spend one year in the Orient.^[4] From 1910 to 1917 he was employed by the [Remington Typewriter Company](#), where he was private secretary to the President.^[5] and ended up as office manager. Here Clark met [Henry Gantt](#), who had reorganized the Remington Typewriter factory at [Ilion, New York](#) in 1910.^[6] From 1919 to 1920 Clark was staff engineer at the H.L. Gantt Company.^[7]

Henry Wallace Clark



Born

Died

Occupation

Employer

Henry W. Clark, 1959

July 27, 1880

St. Louis, Missouri

April 7, 1948 (aged 67)

President

Wallace Clark & Co.

wojtasz.aleksander@gmail.com

database-tools.pl

Gantt Chart - original meaning

<https://babel.hathitrust.org/cgi/pt?id=hvd.hb16ra&seq=7>

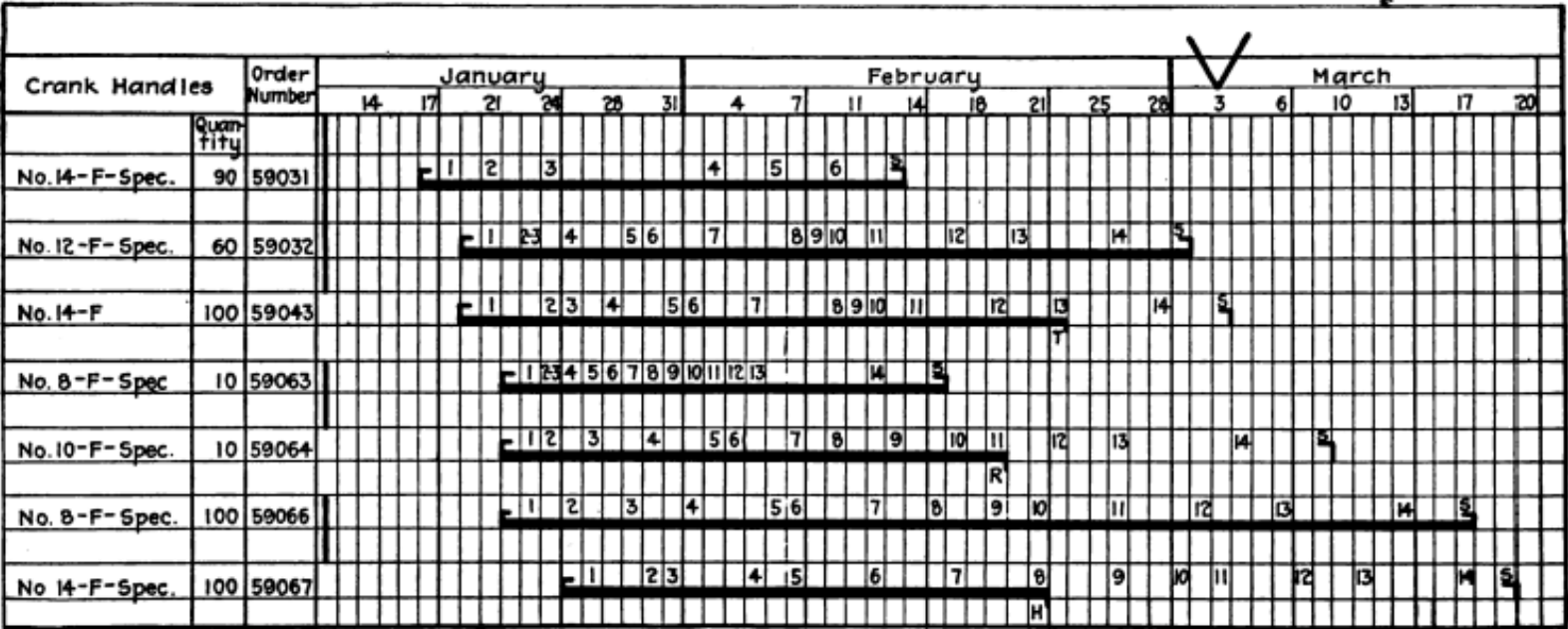
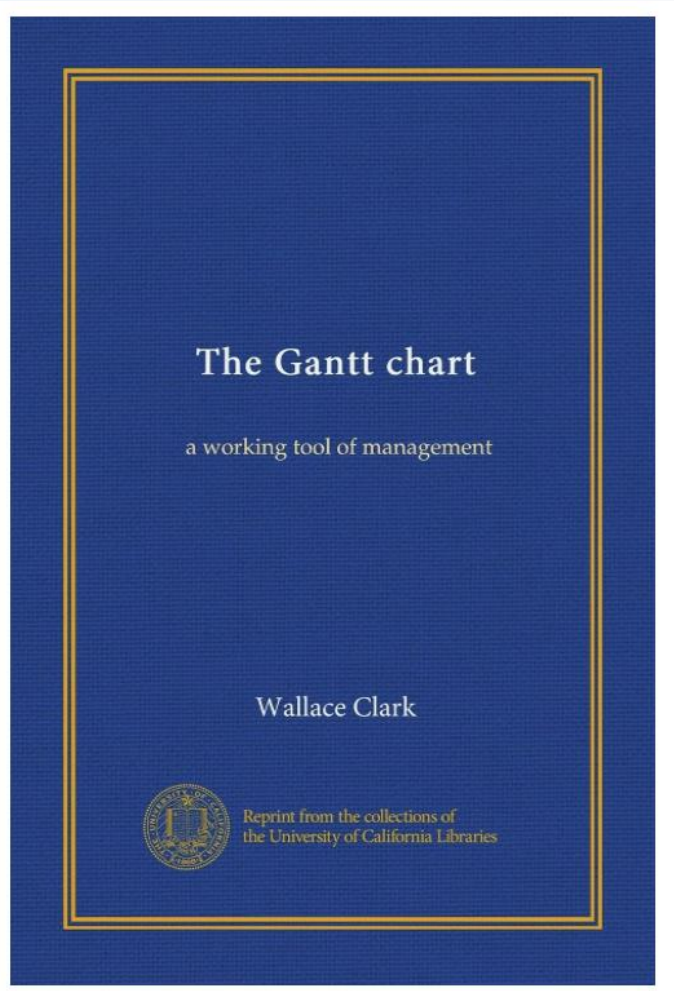


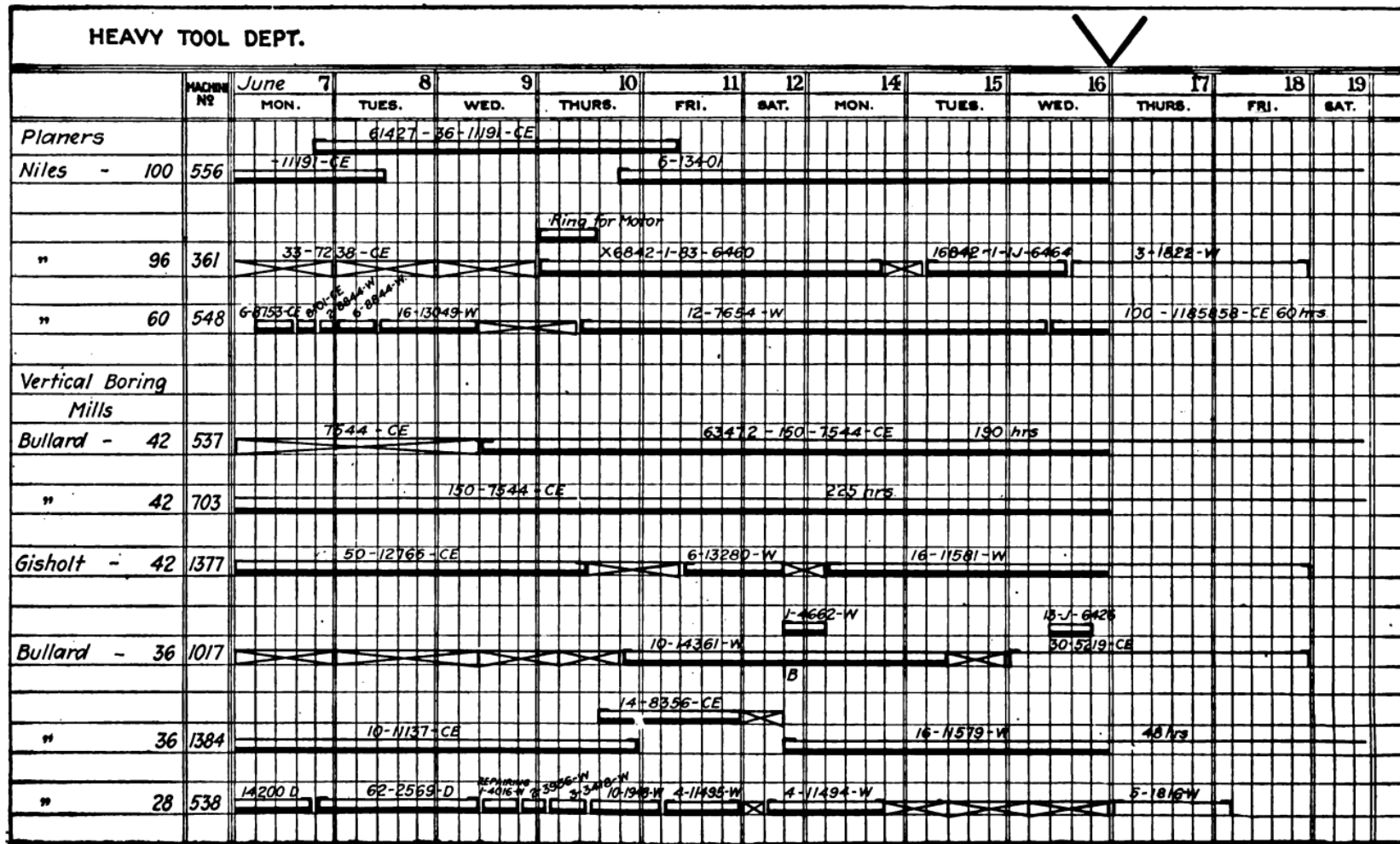
FIGURE 24. A GANTT PROGRESS CHART USED IN A PLANT WHICH MANUFACTURES ON ORDER

In this chart the angle opening to the right indicates the date on which the material was to be issued from stores; the figures indicate the operations to be done on the order and are placed under the dates on which they were to be begun; the angle opening to the left in-

dicates the date on which the parts were to be shipped. The heavy lines show what operations have been done; and the letters under the lines indicate the reasons for delay. The V indicates that this chart was reproduced on March 3.

Gantt Chart - original meaning

<https://babel.hathitrust.org/cgi/pt?id=hvd.hb16ra&seq=7>



Gantt Chart - original meaning

<https://babel.hathitrust.org/cgi/pt?id=hvd.hb16ra&seq=7>

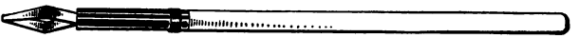
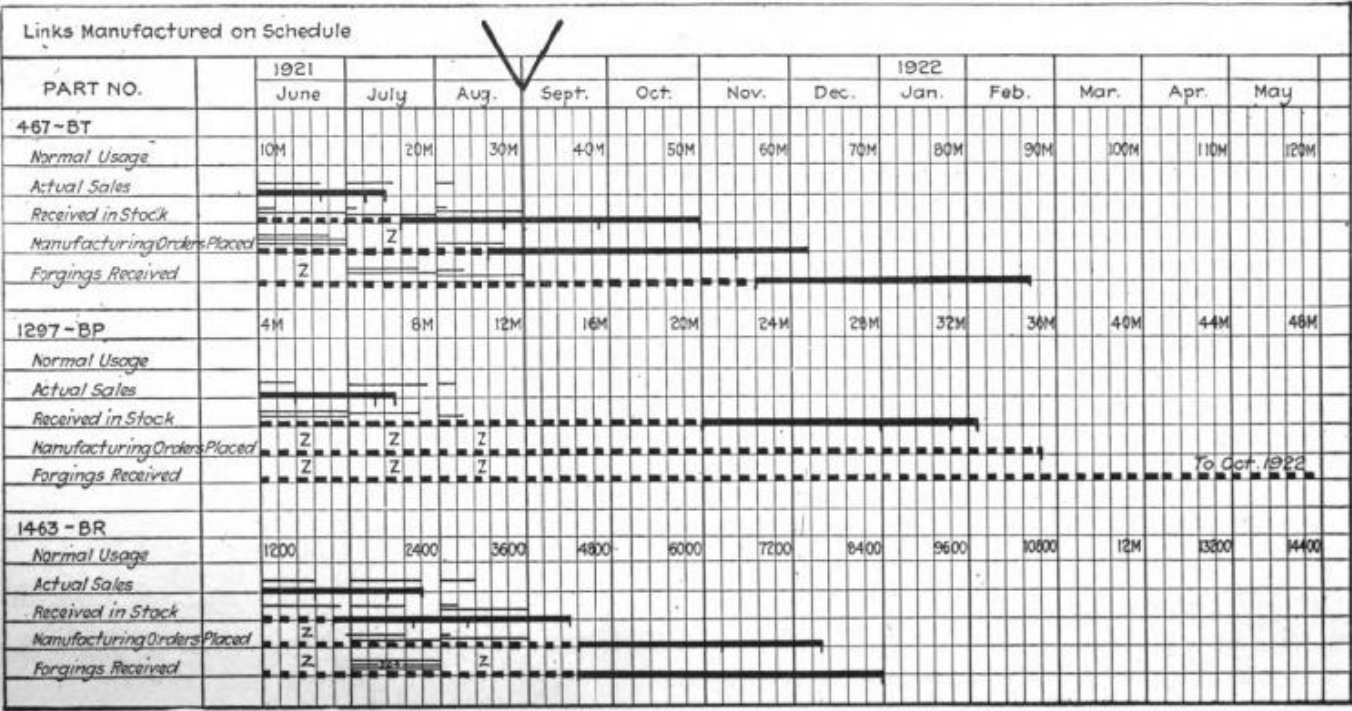


FIGURE 6. LETTERING PEN USED FOR MAKING GANTT CHARTS

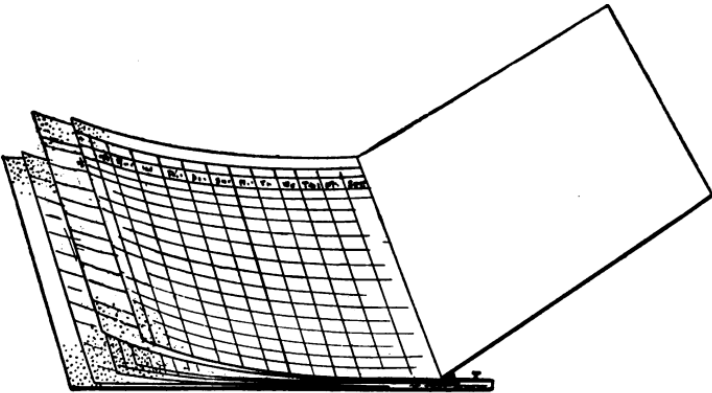
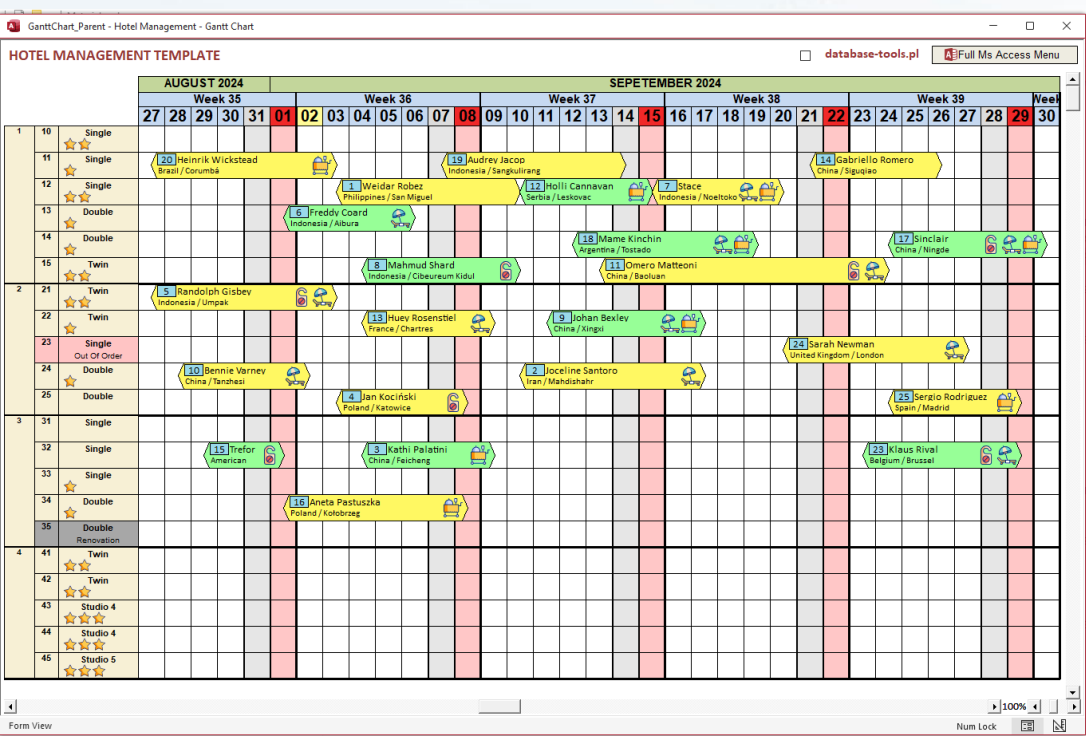


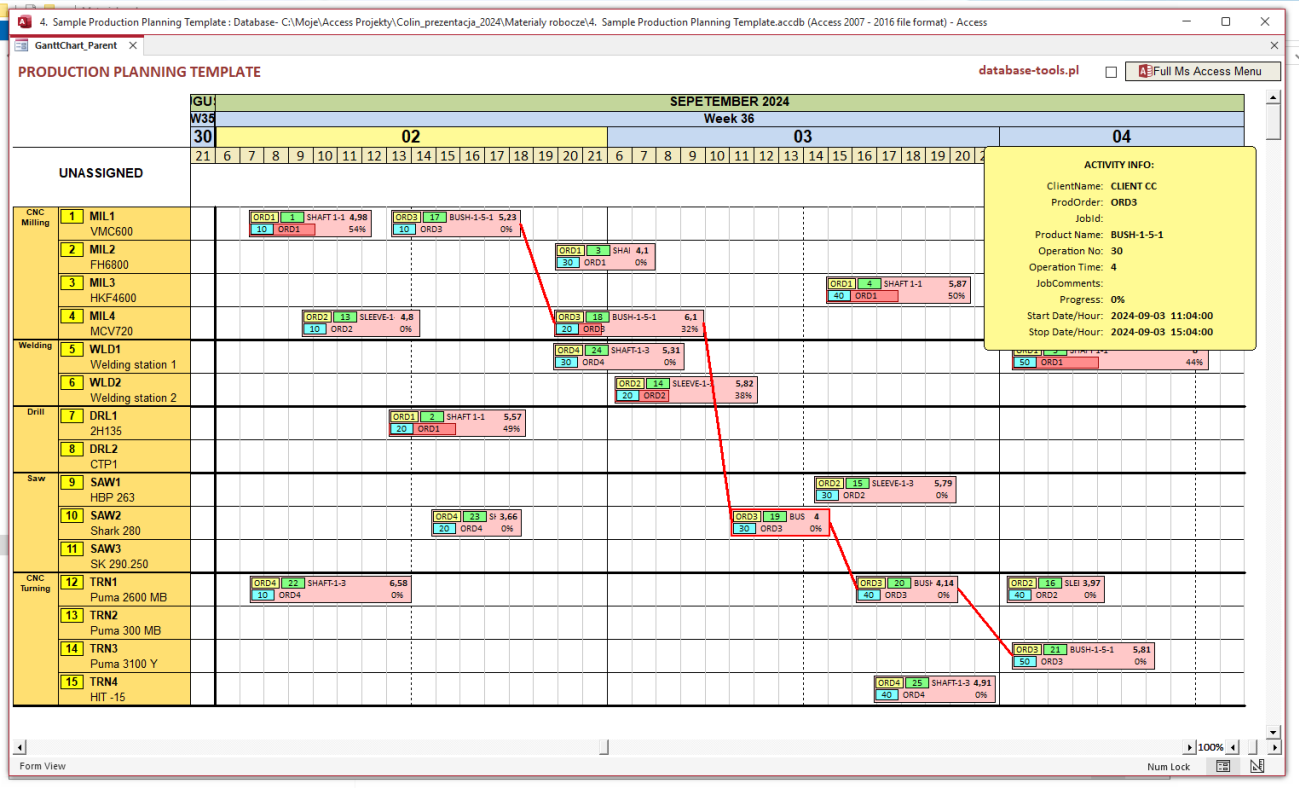
FIGURE 4. BINDER FOR CHARTS

Sample Applications – available for download

Hotel Booking Database

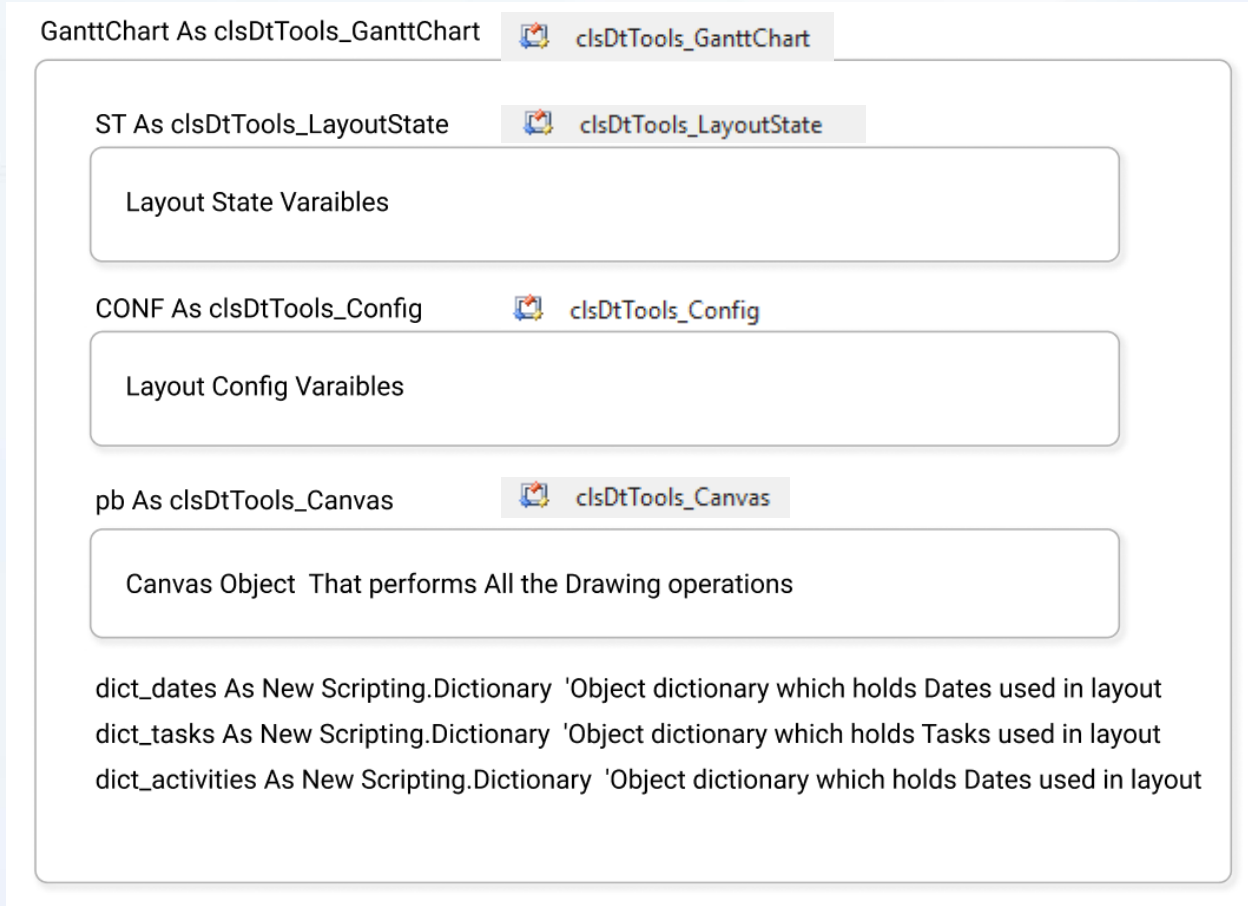


Production Planning Database



How Template Is organised

Relationships between major objects



```
'definition of the major Gantt Chartt object  
Private WithEvents GanttChart As clsDtTools_GanttChart
```

```
'inicialise gantt chart object to life  
Set GanttChart = New clsDtTools_GanttChart
```

Demo Database :

1. Empty Pure - Gantt_chartt_template.accdb



How Template Is organised

Small Helper Objects – used to keep small data units

clsDtTools_Task

```
Option Compare Database
Option Explicit

Public taskID As Long
Public TaskOrder As Long
Public GroupName As String
Public TaskDataDict As New Scripting.Dictionary

Private Sub Class_Initialize()

TaskDataDict.RemoveAll '---

End Sub
```

clsDtTools_Date

```
Option Compare Database
Option Explicit

Public Data As String
Public week As Integer
Public holiday As Integer
Public weekday As Integer
```

clsDtTools_Activity

```
Option Compare Database
Option Explicit

Public ActivityId As Long
Public taskID As Long

Public order As Integer
Public order_in_table As Long

Public date_from As Date
Public date_to As Date

Public fraction_start As Integer
Public fraction_stop As Integer
Public top_fraction As Integer
Public height_fraction As Integer

Public Progress As Integer

Public zz_WO As String ' work order - this value is used for drawing joining lines between activities

Public Active As Boolean

Public dy As Integer      '- coorddinate of movement x as integer
Public dx As Integer      '- coordinate of movement y
Public x As Integer       '- parametr used when activity is in "Unassigned" area
Public y As Integer       '- parametr used when activity is in "Unassigned" area

Public ActivityDataDict As Scripting.Dictionary 'dictionary which will be holding vaious activity data like tilte, hours, person, color etc..

Public Allow_move_TOP As Boolean
Public Allow_move_BOTTOM As Boolean
Public Allow_move_LEFT As Boolean
Public Allow_move_RIGHT As Boolean
Public Allow_move_ALL As Boolean
Public Allow_move_PROGRESS As Boolean
Public Allow_move_VERTICALLY As Boolean

Private Sub Class_Initialize()

Set ActivityDataDict = New Scripting.Dictionary

ActivityDataDict.RemoveAll

Allow_move_TOP = True
Allow_move_BOTTOM = True
Allow_move_LEFT = True
Allow_move_RIGHT = True
Allow_move_ALL = True
Allow_move_PROGRESS = True
Allow_move_VERTICALLY = True

End Sub
```

How Template Is organised

Small Helper Objects –
used to keep small data units

clsDtTools_Rect

```
Option Compare Database
Option Explicit

Private Sub Class_Initialize()
    X1 = 0
    X2 = 0
    Y1 = 0
    Y2 = 0
End Sub

Public X1 As Integer
Public X2 As Integer
Public Y1 As Integer
Public Y2 As Integer
```

clsDtTools_FontDescription

```
Option Compare Database
Option Explicit

Public font_name As String
Public font_bold As Boolean
Public font_italic As Boolean
Public font_forecolor As Long
Public font_adjust As align_enum
Public font_size As Long
```

→

```
Public Enum align_enum
    al_center = 0
    al_left = 1
    al_right = 2
End Enum
```

clsDtTools_MemoryPicture

```
Option Compare Database
Option Explicit

Public PictureType As Integer '1- without opacity map , 2 - with opacity map

Public hDIB As LongPtr
Public hdc As LongPtr

Public hDIB_opacity As LongPtr
Public hdc_opacity As LongPtr

Public width As Integer
Public height As Integer
```

Configuration Object

Configuration parameters in the code

Demo Database :

2. Gantt_chart settings change demo.accdb



clsDtTools_Config

```
Option Compare Database
Option Explicit
```

```
Public cell_width As Integer 'cell width - configuration parameter
Public cell_height As Integer 'cell height - configuration parameter
```

```
Public left_column_width As Integer 'width of the left column
Public distance_of_top_menu As Integer 'Height of unassigned area
```

```
Public indivisible_qty As Integer 'how many sections has one column
Public frozen_rows As Integer '(parameter) number, how many rows are frozen
```

```
Public texts_background_color As Long 'the color of the texts
Public number_of_days_in_week As Integer 'may be 5 or 7 (5 or 7 days in week)
```

```
'===configuration of activities in unassigned area
```

```
Public Unassigned_rectangle_width As Integer
Public Unassigned_rectangle_height As Integer
```

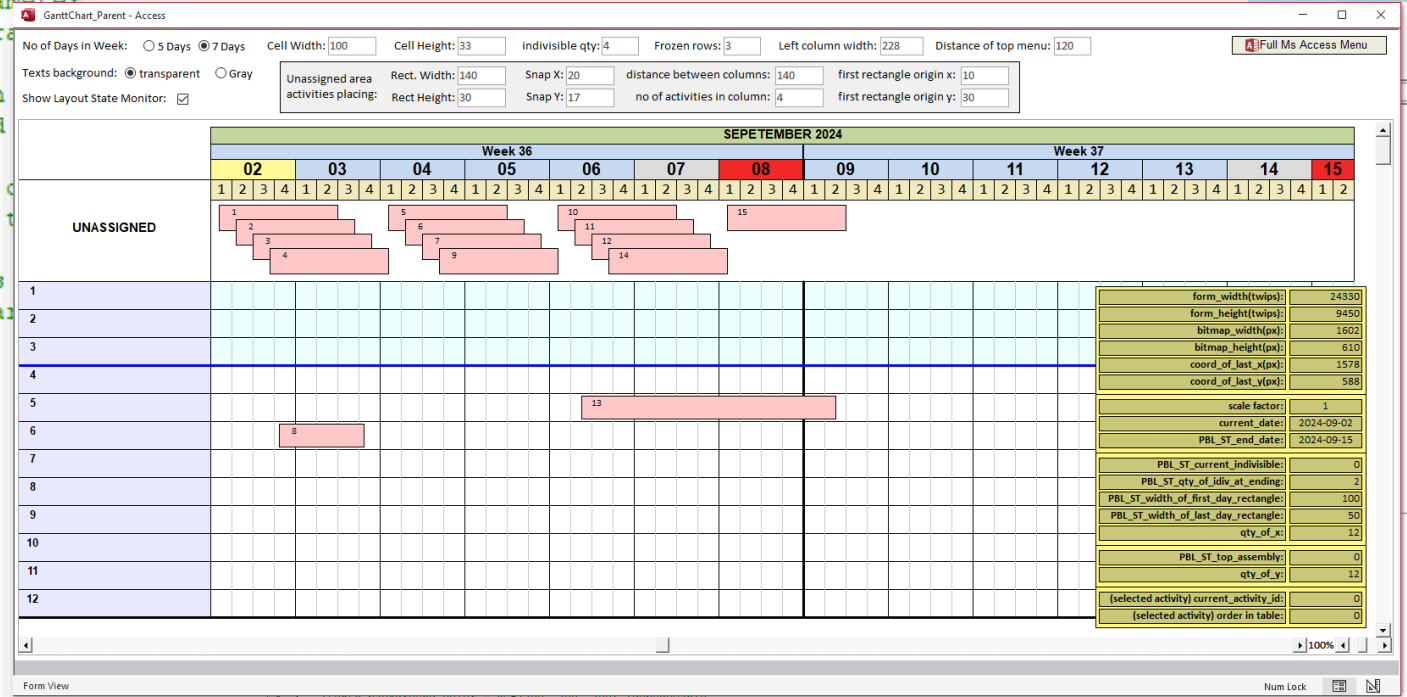
```
Public Unassigned_rectangle_snap_x As Integer
Public Unassigned_rectangle_snap_y As Integer
```

```
Public Unassigned_area_distance_between_columns As Integer
Public Unassigned_area_no_of_activities_in_column As Integer
```

```
Public Unassigned_first_rectangle_origin_x As Integer
Public Unassigned_first_rectangle_origin_y As Integer
```

```
Public Show_Layout_State_monitor As Boolean
Public Draw_Joining_Lines As Boolean
```

'will draw joining lines between activities whose zz WO is the same



Layout State Object

 clsDtTools_LayoutState

```
Option Compare Database
Option Explicit

Public PBL_ST_twips_per_pixel As Double 'number of pixels per one twips (constant fraction)

'--size of the form and size of picture
Public form_width As Long
Public form_height As Long
Public bitmap_width As Integer
Public bitmap_height As Integer

'--scale factor
Public scale_factor As Double 'layout scale factor

'--current start and end date
Public current_date As Date 'current date - which is shown
as first date in the layout (may be changed while user do horizontall scroll)
Public PBL_ST_end_date As Date

Public h_scroll_min_date As Date
Public h_scroll_max_date As Date

'--top_assembly - vertical scroll
Public PBL_ST_top_assembly As Integer ' state of verical scrollbar

'--Day fractions at first and last day
Public PBL_ST_current_indivisible As Integer 'current atomic -
what is the number of the current indivisible '-
e.g. if it is 0 it is full as 1 and all is 7 then 1/7' will not be seen .

Public PBL_ST_qty_of_idiv_at_ending As Integer 'quantity of of indivisible
located at the ending day

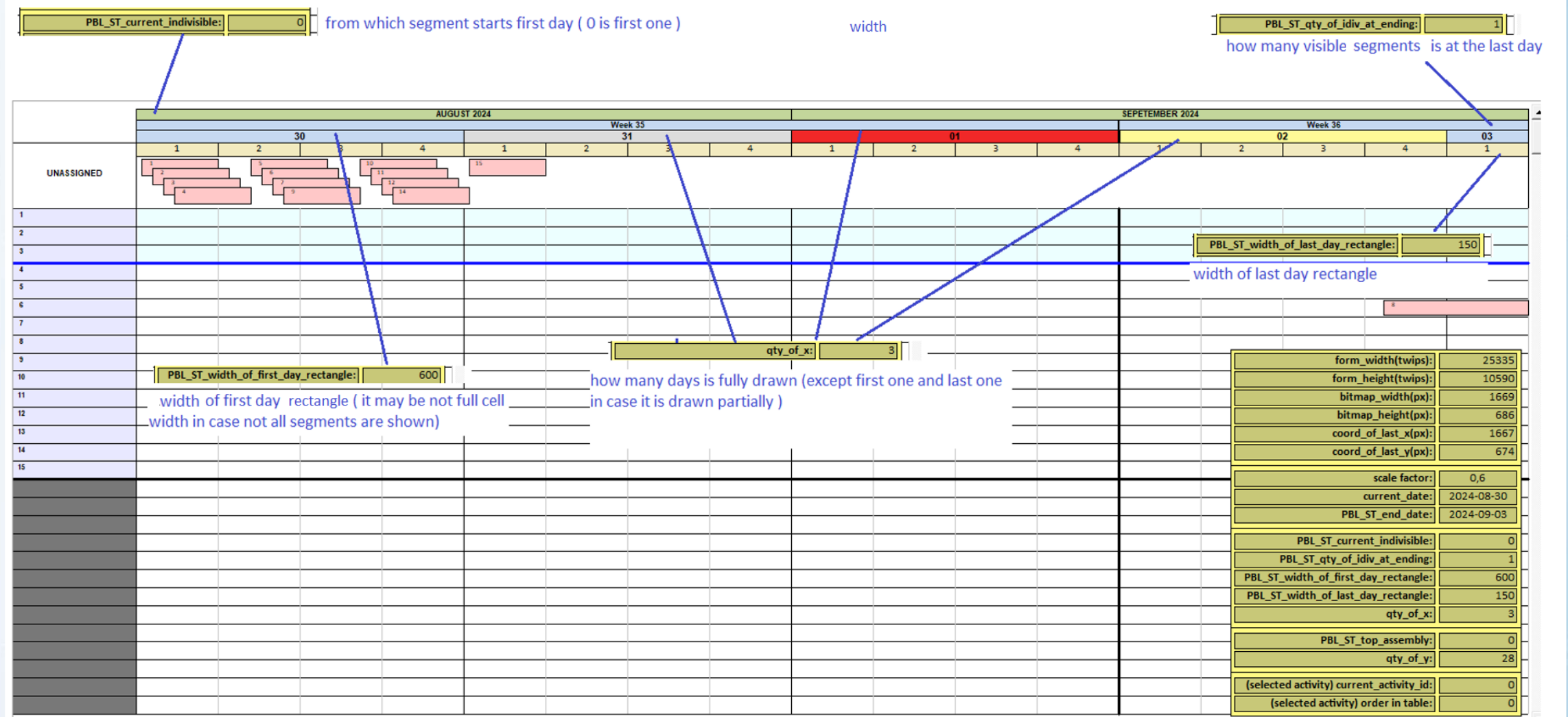
'--technical variables used in other calculations
'--width of first and last day (not taking into account scal2)
Public PBL_ST_width_of_first_day_rectangle As Double
Public PBL_ST_width_of_last_day_rectangle As Double

'--grid variables-----
Public qty_vertical As Integer 'qty of vertical lines
Public qty_horizontal As Integer 'qty of horizontal lines
|
Public qty_of_x As Integer 'number of fully drawn cells horizontally (except first one)
Public qty_of_y As Integer 'number fully of cells vertically

Public coord_of_last_x As Integer 'coordinate of last x
Public coord_of_last_y As Integer 'coordinate of lasy y
'-----
```

Layout State Object

Explanation of layout state variables on sample layout



Gantt Chart Object Interface



clsDtTools_GanttChart

PUBLIC METHODS AND PROPERTIES

General Gantt Chartt procedures

- ≡ order_unassigned_tiles
- ≡ RefreshHolidaysFromDatabase
- ≡ RefreshLayout
- ≡ set_max_of_v_slider
- ≡ Start_GanttChart

References to controls and form

- ≡ h_scroller
- ≡ v_scroller
- ≡ z_scroller
- ≡ GanttChartForm
- ≡ GanttChartImage
- ≡ info_label
- ≡ focus_button

Direct access to state, conf and activities

- ≡ get_activities_collection
- ≡ CONF
- ≡ ST

Activities add / remove

- ≡ AddOneActivity
- ≡ remove_one_activity
- ≡ place_text_on_activity_rect
- ≡ CleanAllActivities

Tasks add / remove

- ≡ AddOneTask
- ≡ CleanAllTasks

Set Layout vertical and horizontal position

- ≡ GotoDate
- ≡ SetVScroll

R click menu service

- ≡ R_click_menu_handler
- ≡ AddRClickMenuPosition
- ≡ ClearRClickMenuPositions
- ≡ ShowRClickMenu

memory picture operations

- ≡ Add_Memory_Picture
- ≡ Add_Memory_Picture_black_and_white
- ≡ Add_Memory_Picture_from_current_layout
- ≡ Add_Memory_Picture_with_opacity_map
- ≡ Add_Memory_Picture_from_png
- ≡ place_picture_on_activity_rect
- ≡ Remove_Memory_Picture

Useful Date utility functions related with dates

- ≡ get_date_difference
- ≡ get_next_date

Gantt Chart Object Interface



clsDtTools_GanttChart

EVENTS GENERATED BY CLASS

Notification that something has changed on layout

ActivityBecomeActive
ActivityBecomeInactive
CurrentDateHasChanged

Notification that user did some click/ drag action

ActivityDbClick
ActivityHasChanged
ActivityIsDragged
LayoutRightMouseClicked
PopUpMenuPositionClick
TaskDbClick

Notification that part of the layout is drawn to intercept and draw yourself

DrawActivityRectangle
DrawDayFractionRectangle
DrawDayRectangle
DrawFrozenRowsBackground
DrawHorizontalGridMainLine
DrawLeftColumnMergedRectangle
DrawMonthRectangle
DrawTaskRectangle
DrawTaskRectangleGray
DrawThickHorizontalBlueLine
DrawThickHorizontalLine
DrawUnassignedArea
DrawVerticalGridAuxiliaryLine
DrawVerticalGridMainLine
DrawWeekRectangle
DrawWeeksDividingLine
FreeDraw

Canvas Object Interface (Refresher)



clsDtTools_Canvas

Drawing operations

- draw_line
- Draw_Memory_Picture
- DrawPolygon
- DrawRectangle
- DrawRoundRectangle
- put_text_in_my_place

Change Color (fore and back)

- BackColor
- ForeColor

Font Related actions

- activate_font
- FontBold
- FontItalic
- FontName
- FontSize
- FontUnderline
- FontWeight

memory picture operations

- initialize_dib
- initialize_dib_black_and_white
- initialize_dib_with_opacity_map
- initialize_dib_from_current_layout
- initialize_selection_rectangle_bg_pictures
- LoadImageControl
- release_memory_pictures
- remove_picture_from_dictionary
- set_bltStretchMode

Technical - Clean and Create

- CleanUp
- Clear
- Create
- DIBtoPictureData
- UpdateScreen

Useful bitmap properties and functions

- dib_height
- dib_width
- hDIB
- TwipsPerPixel

References to Ms Access controls taken from form

- ImageControl
- ImageForm

Loading Data – Loading Tasks (Left Column Items)

```
Private Sub load_table_HotelRooms()  
  
GanttChart.CleanAllTasks  
  
Dim strSql As String  
Dim Task_To_Add As clsDtTools_Task  
Dim res As Boolean  
  
GanttChart.CleanAllTasks  
  
strSql = " SELECT * FROM HotelRooms ORDER BY RoomNo "  
  
Dim Db As DAO.Database  
Dim rs As DAO.Recordset  
  
Set Db = CurrentDb()  
Set rs = Db.OpenRecordset(strSql, dbOpenDynaset, dbSeeChanges) |  
  
Do Until rs.EOF = True  
    '-----  
  
    Set Task_To_Add = New clsDtTools_Task  
  
    Task_To_Add.taskID = CLng(Nz(rs("RoomID"), 0))  
    Task_To_Add.GroupName = Nz(rs("Floor"), "")  
  
    Task_To_Add.TaskDataDict.Add "RoomNo", Nz(rs("RoomNo"), "0")  
    Task_To_Add.TaskDataDict.Add "Floor", Nz(rs("Floor"), "")  
    Task_To_Add.TaskDataDict.Add "RoomType", Nz(rs("RoomType"), "")  
    Task_To_Add.TaskDataDict.Add "RoomStatus", Nz(rs("RoomStatus"), "")  
    Task_To_Add.TaskDataDict.Add "RoomStandard", Nz(rs("RoomStandard"), 0)  
  
    res = GanttChart.AddOneTask(Task_To_Add)  
  
    '-----  
    rs.MoveNext  
Loop  
  
rs.Close  
Set rs = Nothing  
Set Db = Nothing  
  
End Sub
```

Data table

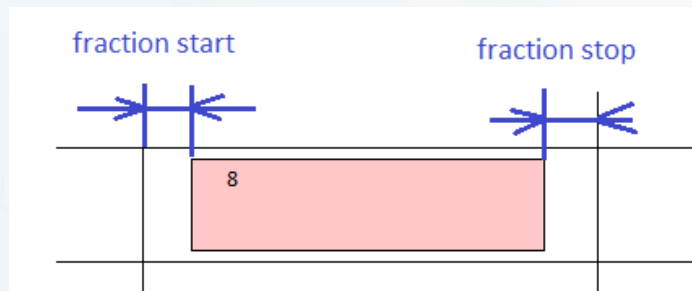
HotelRooms						
RoomID	RoomNo	Floor	RoomType	RoomStatus	RoomStandard	Click to Add
1	10	1	Single	OK	2	
2	11	1	Single	OK	1	
3	12	1	Single		2	
4	13	1	Double		1	
5	14	1	Double		1	
6	15	1	Twin		2	
7	21	2	Twin		2	
8	22	2	Twin		1	
9	23	2	Single	Out Of Order	2	
10	24	2	Double		1	
11	25	2	Double		0	
12	31	3	Single		0	
13	32	3	Single		0	
14	33	3	Single		1	
15	34	3	Double		1	
16	35	3	Double	Renovation	2	
17	41	4	Twin		2	
18	42	4	Twin		2	
19	43	4	Studio 4		3	
20	44	4	Studio 4		3	
21	45	4	Studio 5		3	
*	(New)				0	

Task - Object definition

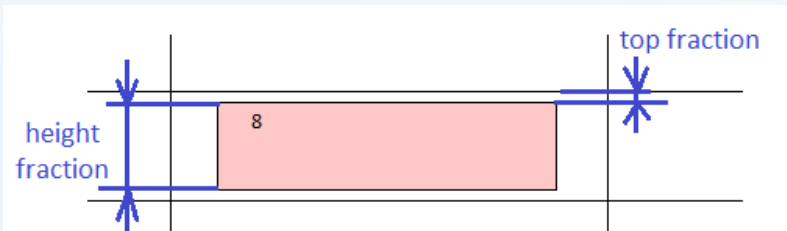
```
clsDtTools_Task  
  
Option Compare Database  
Option Explicit  
  
Public taskID As Long  
Public TaskOrder As Long  
Public GroupName As String  
Public TaskDataDict As New Scripting.Dictionary  
  
Private Sub Class_Initialize()  
  
TaskDataDict.RemoveAll '---  
  
End Sub
```

Loading Data – Loading Activities (Layout Items) Activity attributes explanation

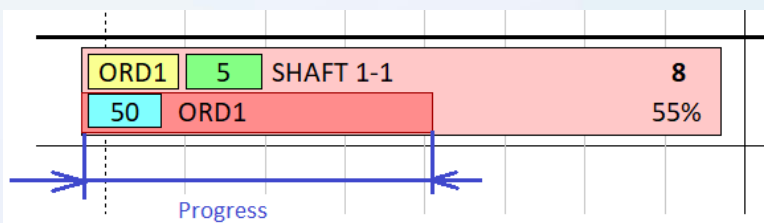
Fraction Start / Stop can be from 0 to 1000



Top/height fraction can be from 0 to 100



Progress can be from 0 to 100



```
clsDtTools_Activity
Option Compare Database
Option Explicit

Public ActivityId As Long
Public taskID As Long

Public order As Integer
Public order_in_table As Long

Public date_from As Date
Public date_to As Date

Public fraction_start As Integer
Public fraction_stop As Integer
Public top_fraction As Integer
Public height_fraction As Integer

Public Progress As Integer

Public zz_WO As String ' work order - this value is used for drawing joining lines between activities

Public Active As Boolean

Public dy As Integer      '- coorddinate of movement x as integer
Public dx As Integer      '- coordinate of movement y
Public x As Integer       '- parametr used when activity is in "Unassigned" area
Public y As Integer       '- parametr used when activity is in "Unassigned" area

Public ActivityDataDict As Scripting.Dictionary 'dictionary which will be holding vaious activity data like tilte, hours, person, color etc..

Public Allow_move_TOP As Boolean
Public Allow_move_BOTTOM As Boolean
Public Allow_move_LEFT As Boolean
Public Allow_move_RIGHT As Boolean
Public Allow_move_ALL As Boolean
Public Allow_move_PROGRESS As Boolean
Public Allow_move_VERTICALLY As Boolean

Private Sub Class_Initialize()

Set ActivityDataDict = New Scripting.Dictionary

ActivityDataDict.RemoveAll

Allow_move_TOP = True
Allow_move_BOTTOM = True
Allow_move_LEFT = True
Allow_move_RIGHT = True
Allow_move_ALL = True
Allow_move_PROGRESS = True
Allow_move_VERTICALLY = True

End Sub
```

Loading Data – Loading Activities (Layout Items)

```
Private Sub load_table_HotelReservations()  
GanttChart.CleanAllActivities  
'-----local variables definition  
Dim strSql As String  
Dim Activity_To_Add As clsDtTools_Activity  
Dim res As Boolean  
  
Dim Db As DAO.Database  
Dim rs As DAO.Recordset  
'-----calculations-----  
strSql = " SELECT * FROM HotelReservations " _  
        & " ORDER BY gantt_id_Room, gantt_date_to"  
  
Set Db = CurrentDb()  
Set rs = Db.OpenRecordset(strSql, dbOpenDynaset, dbSeeChanges)  
  
Do Until rs.EOF = True  
    '-----  
  
    Set Activity_To_Add = New clsDtTools_Activity  
    Activity_To_Add.ActivityId = Nz(rs("ReservationID"), 0)  
    Activity_To_Add.taskID = Nz(rs("gantt_id_Room"), 0)  
  
    Activity_To_Add.date_from = Nz(rs("gantt_date_from"), #1/1/1989#)  
    Activity_To_Add.date_to = Nz(rs("gantt_date_to"), #1/1/1989#)  
    Activity_To_Add.fraction_start = Nz(rs("gantt_fraction_start"), 0)  
    Activity_To_Add.fraction_stop = Nz(rs("gantt_fraction_stop"), 0)  
    Activity_To_Add.top_fraction = Nz(rs("gantt_top_fraction"), 0)  
    Activity_To_Add.height_fraction = Nz(rs("gantt_height_fraction"), 0)  
  
    '--custom properties stored in datadict  
    Activity_To_Add.ActivityDataDict.Add "GuestName", Nz(rs("GuestName"), "-")  
    Activity_To_Add.ActivityDataDict.Add "GuestCountry", Nz(rs("GuestCountry"), "-")  
    Activity_To_Add.ActivityDataDict.Add "GuestCity", Nz(rs("GuestCity"), "-")  
    Activity_To_Add.ActivityDataDict.Add "GuestAddress", Nz(rs("GuestAddress"), "-")  
    Activity_To_Add.ActivityDataDict.Add "GuestPostal", Nz(rs("GuestPostal"), "-")  
    Activity_To_Add.ActivityDataDict.Add "GuestEmail", Nz(rs("GuestEmail"), "-")  
    Activity_To_Add.ActivityDataDict.Add "GuestPhone", Nz(rs("GuestPhone"), "-")  
    Activity_To_Add.ActivityDataDict.Add "GuestComments", Nz(rs("GuestComments"), "")  
  
    Activity_To_Add.ActivityDataDict.Add "GuestInRoomDining", Nz(rs("GuestInRoomDining"), False)  
    Activity_To_Add.ActivityDataDict.Add "GuestSunbedReservation", Nz(rs("GuestSunbedReservation"), False)  
    Activity_To_Add.ActivityDataDict.Add "GuestDontDisturb", Nz(rs("GuestDontDisturb"), False)  
    Activity_To_Add.ActivityDataDict.Add "GuestPaymentStatus", Nz(rs("GuestPaymentStatus"), "Not Paid")  
  
    Activity_To_Add.Allow_move_PROGRESS = False  
    Activity_To_Add.Allow_move_VERTICALLY = True  
    Activity_To_Add.Allow_move_LEFT = True  
    Activity_To_Add.Allow_move_RIGHT = True  
    Activity_To_Add.Allow_move_TOP = False  
    Activity_To_Add.Allow_move_BOTTOM = False  
    Activity_To_Add.Allow_move_ALL = True  
  
    res = GanttChart.AddOneActivity(Activity_To_Add)  
    '-----  
    rs.MoveNext  
Loop  
rs.Close  
Set rs = Nothing  
Set Db = Nothing  
End Sub
```

gantt_id_Room	gantt_date_from	gantt_date_to	gantt_fraction_start	gantt_fraction_stop	gantt_top_fraction	gantt_height_fraction	GuestName	GuestCountry	GuestCity	GuestAddress	GuestPostal	GuestComments	GuestEmail	GuestPhone	GuestInRoom
3	2024-09-04	2024-09-11	500	500	0	0	100 Weidar Robez	Philippines	San Miguel	8396 Helena Junction	8301	sample commer	wrobezqm@soul	764-289-7931	☐
10	2024-09-10	2024-09-17	500	500	0	0	100 Joceline Santoro	Iran	Mahdishahr	314 Golden Leaf Plaza			jsantor08@ucia	417-870-1703	☒
13	2024-09-05	2024-09-10	500	500	0	0	100 Karmi Palastini	China	Feicheng	2849 Service Court			xpalatnicd@eei	520-826-8172	☒
11	2024-09-04	2024-09-09	500	500	0	0	100 Jan Kocinski	Poland	Katowice	ul Wolnosci 22	628206	sample commer	mbeardson@xin	218-566-9380	☐
7	2024-08-28	2024-09-04	500	500	0	0	100 Randolph Gisbey	Indonesia	Umpak	9 Springview Crossing			rgisbeyhl@bizjon	726-688-4029	☐
4	2024-09-02	2024-09-07	500	500	0	0	100 Freddy Coard	Indonesia	Aibura	4495 Forest Trail			fcoardkh@lco	615-767-9004	☐
3	2024-09-16	2024-09-21	500	500	0	0	100 Stace Waggett	Indonesia	Noelotoko	7500 Eagle Crest Road			swaggett0@yeh	900-917-2754	☒
6	2024-08-05	2024-08-11	500	500	0	0	100 Mahmud Shard	Indonesia	Cileureum Kidul	74705 Fieldstone Pass			mshardel@evee	653-920-7372	☐
8	2024-09-12	2024-09-18	500	500	0	0	100 Johan Bexley	China	Xingqi	0359 Miller Pass		sample commer	jbexley06@bigio	493-972-2487	☒
10	2024-08-29	2024-09-03	500	500	0	0	100 Bennie Varney	China	Tanzhesi	489 Schurz Avenue			bvarney6@umun	494-219-8490	☐
6	2024-09-14	2024-09-25	500	500	0	0	100 Omero Matteoni	China	Baoluan	7786 Calypso Way			omatteoni@qgs	584-654-0770	☐

clsDtTools_Activity

```
Option Compare Database  
Option Explicit  
  
Public ActivityId As Long  
Public taskID As Long  
  
Public order As Integer  
Public order_in_table As Long  
  
Public date_from As Date  
Public date_to As Date  
  
Public fraction_start As Integer  
Public fraction_stop As Integer  
Public top_fraction As Integer  
Public height_fraction As Integer  
  
Public Progress As Integer  
  
Public zz_WO As String ' work order - this value is used for drawing joining lines between activities  
  
Public Active As Boolean  
  
Public dy As Integer '- cooordinate of movement x as integer  
Public dx As Integer '- coordinate of movement y  
Public x As Integer '- parametr used when activity is in "Unassigned" area  
Public y As Integer '- parametr used when activity is in "Unassigned" area  
  
Public ActivityDataDict As Scripting.Dictionary 'dictionary which will be holding vaious activity data like tilte, hours, person, color etc..  
  
Public Allow_move_TOP As Boolean  
Public Allow_move_BOTTOM As Boolean  
Public Allow_move_LEFT As Boolean  
Public Allow_move_RIGHT As Boolean  
Public Allow_move_ALL As Boolean  
Public Allow_move_PROGRESS As Boolean  
Public Allow_move_VERTICALLY As Boolean  
  
Private Sub Class_Initialize()  
  
Set ActivityDataDict = New Scripting.Dictionary  
  
ActivityDataDict.RemoveAll  
  
Allow_move_TOP = True  
Allow_move_BOTTOM = True  
Allow_move_LEFT = True  
Allow_move_RIGHT = True  
Allow_move_ALL = True  
Allow_move_PROGRESS = True  
Allow_move_VERTICALLY = True  
  
End Sub
```

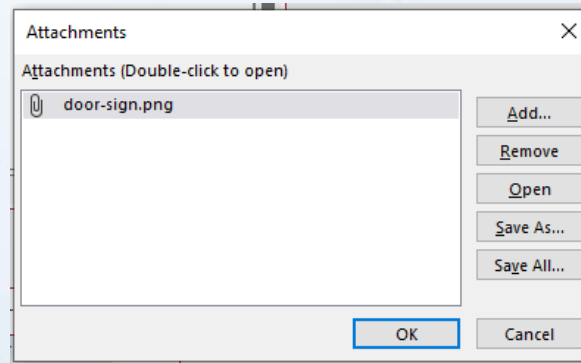
Loading Data – Loading small asset images

```
Private Sub initialize_pictures()  
  
Call detach_picture("door-sign.png")  
Call detach_picture("favourite.png")  
Call detach_picture("food-trolley.png")  
Call detach_picture("sunbed.png")  
  
Call GanttChart.Add_Memory_Picture_from_png(CurrentProject.Path & "\Pics\" & "door-sign.png", "door-sign.png")  
Call GanttChart.Add_Memory_Picture_from_png(CurrentProject.Path & "\Pics\" & "favourite.png", "favourite.png")  
Call GanttChart.Add_Memory_Picture_from_png(CurrentProject.Path & "\Pics\" & "food-trolley.png", "food-trolley.png")  
Call GanttChart.Add_Memory_Picture_from_png(CurrentProject.Path & "\Pics\" & "sunbed.png", "sunbed.png")  
  
'remove temporary folder with pictures  
Dim fs As Object  
Set fs = CreateObject("Scripting.FileSystemObject")  
Call fs.DeleteFolder(CurrentProject.Path & "\Pics", True)  
  
End Sub
```

```
Private Function detach_picture(File_name As String)  
  
Dim fs As Object  
Set fs = CreateObject("Scripting.FileSystemObject")  
  
Dim rez As Boolean  
  
'verifies if picture exists  
rez = fs.FolderExists(CurrentProject.Path & "\Pics")  
  
If rez = False Then  
    fs.CreateFolder (CurrentProject.Path & "\Pics")  
End If  
  
Dim strSql As String  
  
strSql = " SELECT Pictures.file_name, Pictures.file_attach FROM Pictures " _  
        & " WHERE (((Pictures.file_name)='" & File_name & "')) "  
  
Dim Db As DAO.Database  
Dim rs As DAO.Recordset  
Dim rs_sub As Recordset  
  
Set Db = CurrentDb()  
Set rs = Db.OpenRecordset(strSql)  
  
Set rs_sub = rs(1).Value  
  
If fs.FileExists(CurrentProject.Path & "\Pics\" & File_name) = True Then  
    fs.DeleteFile CurrentProject.Path & "\Pics\" & File_name  
Else  
    rs_sub.Fields("FileData").SaveToFile CurrentProject.Path & "\Pics\" & File_name 'detaches picture  
End If  
  
rs_sub.Close  
rs.Close  
Set rs = Nothing  
Set Db = Nothing  
  
End Function
```

Data table that holds pictures

file_name	@	Click to Add
door-sign.png	@(1)	
favourite.png	@(1)	
food-trolley.png	@(1)	
sunbed.png	@(1)	
*	@(0)	



Reacting on Changes – Activity has Changed event

ActivityHasChanged

```
Private Sub GanttChart_ActivityHasChanged(activity As clsDtTools_Activity, UndoChange As Boolean)

'--round to closest middle of the day

    If activity.date_to < activity.date_from Then activity.date_to = activity.date_from
    If activity.date_to = activity.date_from Then activity.date_to = GanttChart.get_next_date(activity.date_to)

    activity.fraction_start = 500
    activity.fraction_stop = 500

    If activity.height_fraction = 0 Then activity.height_fraction = 100
    activity.height_fraction = 100
    activity.top_fraction = 0

'--save data back to table----
Dim strSql As String
strSql = " SELECT * FROM HotelReservations WHERE ReservationID = " & activity.ActivityId
Dim Db As DAO.Database
Dim rs As DAO.Recordset

Set Db = CurrentDb()
Set rs = Db.OpenRecordset(strSql, dbOpenDynaset, dbSeeChanges)
    If rs.EOF = True Then
        Exit Sub
    End If

    rs.Edit
    rs("gantt_id_Room") = activity.taskID
    rs("gantt_date_from") = activity.date_from
    rs("gantt_date_to") = activity.date_to
    rs("gantt_fraction_start") = activity.fraction_start
    rs("gantt_fraction_stop") = activity.fraction_stop
    rs("gantt_top_fraction") = activity.top_fraction
    rs("gantt_height_fraction") = activity.height_fraction

    rs.Update

rs.Close
Set rs = Nothing
Set Db = Nothing

Call GanttChart.order_unassigned_tiles
Call GanttChart.RefreshLayout

End Sub
```

Reacting on Changes – Activity is Dragged (or resized) event

ActivityIsDragged

```
Private Sub GanttChart_ActivityIsDragged(activity As clsDtTools_Activity)

'Dim contents As String

activity.ActivityDataDict.Item("ganttt_start_hour") = convert_fraction_to_time(activity.fraction_start)
activity.ActivityDataDict.Item("ganttt_stop_hour") = convert_fraction_to_time(1000 - activity.fraction_stop)

'calculate new length and writes it back into "TotalTime"

Dim length_days As Integer
Dim length_fractions As Integer
Dim fraction_length As Integer

length_days = GanttChart.get_date_difference(activity.date_from, activity.date_to)
length_days = length_days + 1

length_fractions = activity.fraction_stop + activity.fraction_start

If length_fractions > 1000 Then
    length_fractions = length_fractions - 1000
    length_days = length_days - 1
End If

If length_fractions > 0 Then
    length_days = length_days - 1
    fraction_length = 1000 - length_fractions
End If

Dim fraction_hours As Double

fraction_hours = CDb1(fraction_length) / CDb1(1000) * CDb1(16)
fraction_hours = fraction_hours + (length_days * 16)
fraction_hours = Round(fraction_hours, 2)

activity.ActivityDataDict.Item("OperationTime") = fraction_hours
```

Reacting on Changes – Activity / Task Double Click Events

ActivityDbClick

```
Private Sub GanttChart_ActivityDbClick(activity As clsDtTools_Activity)

    DoCmd.OpenForm "HotelReservation_edit", acNormal, , "ReservationID=" & activity.ActivityId, , acDialog
    Call RefreshLayoutFromDatabase

End Sub
```

TaskDbClick

```
Private Sub GanttChart_ActivityDbClick(activity As clsDtTools_Activity)

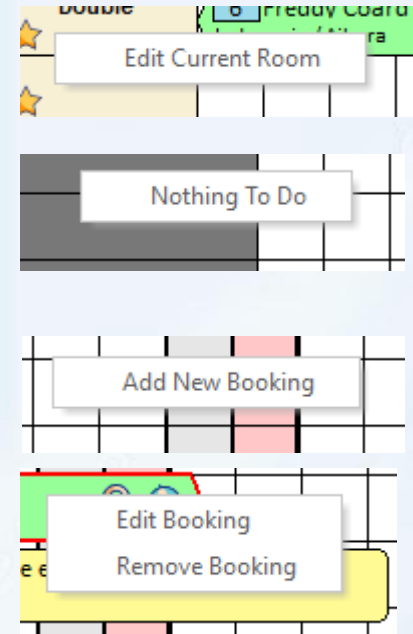
    DoCmd.OpenForm "HotelReservation_edit", acNormal, , "ReservationID=" & activity.ActivityId, , acDialog
    Call RefreshLayoutFromDatabase

End Sub
```

Layout Right Click event – Initialise Right Click menu depending on clicked area

```
Private Sub GanttChart_LayoutRightMouseClicked(ClickArea As String,  
    Date_down As Date, Fraction_Down As Integer,  
    R_click_Activity As clsDtTools_Activity, R_click_task As clsDtTools_Task)  
  
    GanttChart.ClearRClickMenuPositions  
  
    Select Case ClickArea  
  
    Case "UPPER MENU"  
        'MsgBox "clicked on upper menu"  
  
    Case "LEFT COLUMN"  
        GanttChart.AddRClickMenuPosition "Edit Current Room"  
        GanttChart.ShowRClickMenu  
  
    Case "LEFT COLUMN BELOW LAST TASK"  
        GanttChart.AddRClickMenuPosition "Nothing To Do"  
        GanttChart.ShowRClickMenu  
  
    Case "LAYOUT BELOW LAST TASK"  
        'MsgBox "clicked layout below last task"  
  
    Case "LAYOUT"  
        GanttChart.AddRClickMenuPosition "Add New Booking"  
        GanttChart.ShowRClickMenu  
  
    Case "ACTIVITY"  
        GanttChart.AddRClickMenuPosition "Edit Booking"  
        GanttChart.AddRClickMenuPosition "Remove Booking"  
        GanttChart.ShowRClickMenu  
  
    End Select  
  
End Sub
```

LayoutRightMouseClicked



Layout Right Click event - React on Right Menu Position Click PopUpMenuPositionClick

```
Private Sub GanttChart_PopUpMenuPositionClick(position_text As String,  
    Date_down As Date, Fraction_Down As Integer,  
    R_click_Activity As clsDtTools_Activity, R_click_task As clsDtTools_Task)  
Select Case position_text  
  
    Case "Add New Booking"  
        Call Add_new_reservation(Date_down, Fraction_Down, R_click_task)  
  
    Case "Remove Booking"  
        Call Remove_reservation(R_click_Activity)  
  
    Case "Edit Booking"  
  
        DoCmd.OpenForm "HotelReservation_edit", acNormal, , "ReservationID=" & R_click_Activity.ActivityId, , acDialog  
        Call RefreshLayoutFromDatabase  
  
    Case "Edit Current Room"  
  
        DoCmd.OpenForm "HotelRoom_edit", acNormal, , "RoomID = " & R_click_task.taskID, , acDialog  
        Call RefreshLayoutFromDatabase  
  
    Case Else  
        ' MsgBox "Clicked at position: " & position_text  
  
End Select  
End Sub
```

Draw Parts of Gantt Chart (intercepting drawing events)

DrawActivityRectangle

Draw surrounding rectangle and progress rectangle

```
Private Sub GanttChart_DrawActivityRectangle(activity As clsDtTools_Activity, PositionDetails As clsDtTools_Rect,
adjusted_progress As Integer, canvas As clsDtTools_Canvas, scale_factor As Double,
ST As clsDtTools_LayoutState, ApplyDefaultDraw As Boolean)

    ApplyDefaultDraw = False

    '-----local variables declaration-----
    Dim marked_red As Boolean
    Dim color_no_1 As Long 'light color of background
    Dim old_color_number As Long
    Dim col As Long

    Dim r1 As New clsDtTools_Rect 'global rectangle
    Dim r2 As New clsDtTools_Rect 'local coordinates of text
    Dim fd As New clsDtTools_FontDescription ' font_description

    Dim text_to_print As String

    '-----calculations-----

    marked_red = activity.Active
    color_no_1 = RGB(255, 200, 200)

    '1. draw background rectangle

    If marked_red = False Then
        Call canvas.DrawRectangle(PositionDetails.X1, PositionDetails.Y1, PositionDetails.X2, PositionDetails.Y2, color_no_1)
    Else
        old_color_number = canvas.ForeColor
        canvas.ForeColor = RGB(255, 0, 0)
        Call canvas.DrawRectangle(PositionDetails.X1, PositionDetails.Y1, PositionDetails.X2, PositionDetails.Y2, color_no_1, 2)
        canvas.ForeColor = old_color_number
    End If

    '---draw progress rectangle (with progress)

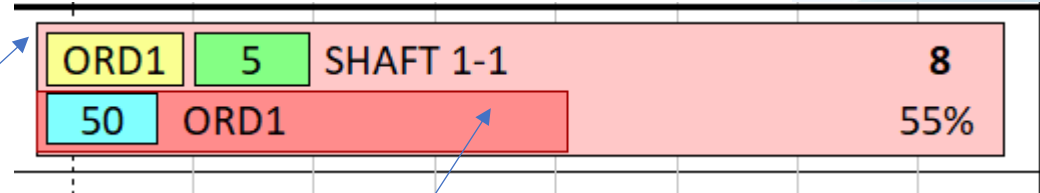
    If PositionDetails.Y2 - PositionDetails.Y1 > 8 Then 'progress rectangle is drawn only when width of main rectangle is more than 8 - otherwise it is too small.

        Dim pix_proc As Long
        pix_proc = CLng((CDBl(adjusted_progress) / CDBl(100)) * CDBl(PositionDetails.X2 - PositionDetails.X1))
        old_color_number = canvas.ForeColor
        canvas.ForeColor = RGB(164, 0, 0)

        Dim second_coord As Integer
        second_coord = PositionDetails.X1 + pix_proc
        If second_coord > GanttChart.ST.coord_of_last_x Then second_coord = GanttChart.ST.coord_of_last_x

        Call canvas.DrawRectangle(PositionDetails.X1, PositionDetails.Y1 + ((PositionDetails.Y2 - PositionDetails.Y1) / 2), second_coord, PositionDetails.Y2 - 2, RGB(255, 140, 140))
        canvas.ForeColor = old_color_number

    End If
```



Draw Parts of Gantt Chart (intercepting drawing events)

DrawActivityRectangle

Place Texts

```
Private Sub GanttChart_DrawActivityRectangle(activity As clsDtTools_Activity, PositionDetails As clsDtTools_Rect,
adjusted_progress As Integer, canvas As clsDtTools_Canvas, scale_factor As Double,
ST As clsDtTools_LayoutState, ApplyDefaultDraw As Boolean)

Dim r1 As New clsDtTools_Rect 'global rectangle
Dim r2 As New clsDtTools_Rect 'local coordinates of text
Dim fd As New clsDtTools_FontDescription ' font_description
Dim text_to_print As String
```

Beginning of event procedure

Continuation of procedure

```
'-----insert texts on layout-----

Dim rectangle_width As Integer
rectangle_width = (PositionDetails.X2 - PositionDetails.X1) / scale_factor

'-----
Set r1 = PositionDetails

fd.font_adjust = al_center
fd.font_bold = False
fd.font_forecolor = RGB(0, 0, 0)
fd.font_name = "Calibri"
fd.font_size = 8

'-----JOB id in yellow box-----

col = RGB(250, 255, 145)
text_to_print = activity.zz_WO

fd.font_adjust = al_center

r2.X1 = 3
r2.X2 = 35
r2.Y1 = 3
r2.Y2 = 15
Call GanttChart.place_text_on_activity_rect(r1, r2, fd, text_to_print, al_left, col)

'-----Job ID in green rect

col = RGB(132, 255, 132)
text_to_print = activity.ActivityId

fd.font_adjust = al_center

r2.X1 = 38
r2.X2 = 65
r2.Y1 = 3
r2.Y2 = 15
Call GanttChart.place_text_on_activity_rect(r1, r2, fd, text_to_print, al_left, col)

'-----Product Name

col = RGB(200, 200, 200) 'later 0
col = 0

r2.X1 = 69
r2.X2 = rectangle_width - 30
r2.Y1 = 3
r2.Y2 = 15

If r2.X2 > r2.X1 Then 'only when in result of calculations x2 > x1
'-----
fd.font_adjust = al_left
fd.font_bold = False

text_to_print = activity.ActivityDataDict.Item("ProductName")
Call GanttChart.place_text_on_activity_rect(r1, r2, fd, text_to_print, al_left, GanttChart.CONF.texts_background_color)
'-----
End If
```

Draw Parts of Gantt Chart (intercepting drawing events)

DrawActivityRectangle

Place Asset Images

```
Private Sub GanttChart_DrawActivityRectangle(activity As clsDtTools_Activity, PositionDetails As clsDtTools_Rect,
adjusted_progress As Integer, canvas As clsDtTools_Canvas, scale_factor As Double,
ST As clsDtTools_LayoutState, ApplyDefaultDraw As Boolean)

Dim r1 As New clsDtTools_Rect 'global rectangle
Dim r2 As New clsDtTools_Rect 'local coordinates of text
Dim fd As New clsDtTools_FontDescription ' font_description
Dim text_to_print As String
```

Beginning of event procedure

```
'---insert pictures-----
```

```
Dim current_space_from_the_right As Integer
current_space_from_the_right = 0
```

```
If activity.ActivityDataDict.Item("GuestInRoomDining") = True Then
```

```
    r2.X1 = 6 + current_space_from_the_right
    r2.X2 = 6 + 24 + current_space_from_the_right
    r2.Y1 = 5
    r2.Y2 = 5 + 24
    Call GanttChart.place_picture_on_activity_rect(r1, r2, "food-trolley.png", al_right)
    current_space_from_the_right = current_space_from_the_right + 26
```

```
End If
```

```
If activity.ActivityDataDict.Item("GuestSunbedReservation") = True Then
```

```
    r2.X1 = 6 + current_space_from_the_right
    r2.X2 = 6 + 24 + current_space_from_the_right
    r2.Y1 = 5
    r2.Y2 = 5 + 24
    Call GanttChart.place_picture_on_activity_rect(r1, r2, "sunbed.png", al_right)
    current_space_from_the_right = current_space_from_the_right + 26
```

```
End If
```

```
If activity.ActivityDataDict.Item("GuestDontDisturb") = True Then
```

```
    r2.X1 = 6 + current_space_from_the_right
    r2.X2 = 6 + 24 + current_space_from_the_right
    r2.Y1 = 5
    r2.Y2 = 5 + 24
    Call GanttChart.place_picture_on_activity_rect(r1, r2, "door-sign.png", al_right)
    current_space_from_the_right = current_space_from_the_right + 26
```

```
End If
```



Draw Parts of Gantt Chart (intercepting drawing events)

THANK YOU VERY MUCH !