Yumbo. Scheduling, Planning and Resource Allocation

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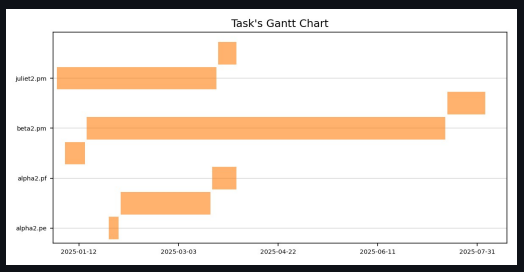
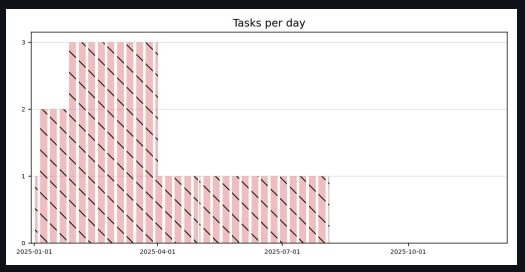
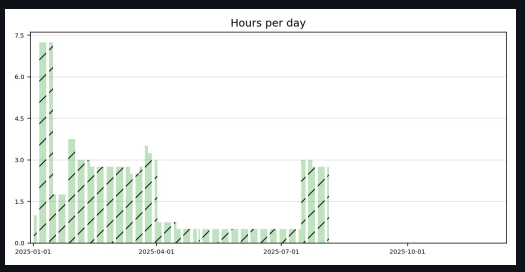
Source code, documentation and sample Excel input files can be found on Yumbo's GitHub repository.

28 January 2025, 13:55:34 PM

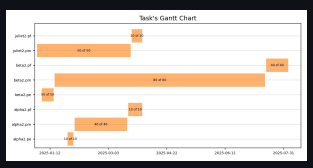
Experts overview

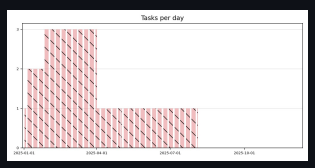


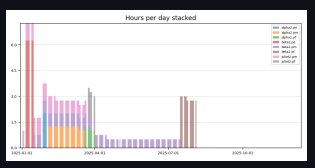


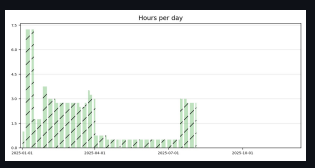


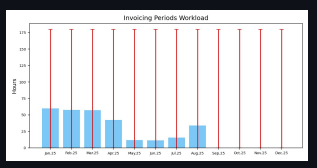
PM.Henry the 2nd unit











	Weekdays	alpha2.pe	alpha2.pm	alpha2.pf	beta2.pe	beta2.pm	beta2.pf	juliet2.pm	juliet2.pf
2025-01-01	Wednesday								
2025-01-02	Thursday							1.00	
2025-01-03	Friday							1.00	
2025-01-04	Saturday								
2025-01-05	Sunday								
2025-01-06	Monday				6.25			1.00	
2025-01-07	Tuesday				6.25			1.00	
2025-01-08	Wednesday				6.25			1.00	
2025-01-09	Thursday				6.25			1.00	
2025-01-10	Friday				6.25			1.00	
2025-01-11	Saturday								
2025-01-12	Sunday								
2025-01-13	Monday				6.25			1.00	
2025-01-14	Tuesday				6.25			1.00	
2025-01-15	Wednesday				6.25			1.00	
2025-01-16	Thursday					0.75		1.00	
2025-01-17	Friday					0.75		1.00	
2025-01-18	Saturday								
2025-01-19	Sunday								
2025-01-20	Monday					0.75		1.00	
2025-01-21	Tuesday					0.75		1.00	
2025-01-22	Wednesday					0.75		1.00	
2025-01-23	Thursday					0.75		1.00	
2025-01-24	Friday					0.75		1.00	
2025-01-25	Saturday								
2025-01-26	Sunday								
2025-01-27	Monday	2.00				0.75		1.00	
2025-01-28	Tuesday	2.00				0.75		1.00	
2025-01-29	Wednesday	2.00				0.75		1.00	
2025-01-30	Thursday	2.00				0.75		1.00	
2025-01-31	Friday	2.00				0.75		1.00	
2025-02-01	Saturday								
2025-02-02	Sunday								
2025-02-03	Monday		1.25			0.75		1.00	
2025-02-04	Tuesday		1.25			0.75		1.00	
2025-02-05	Wednesday		1.25			0.75		1.00	
2025-02-06	Thursday		1.25			0.75		1.00	
2025-02-07	Friday		1.25			0.75		1.00	
2025-02-08	Saturday								
2025-02-09	Sunday								
2025-02-10	Monday		1.25			0.75		1.00	
2025-02-11	Tuesday		1.25			0.75		1.00	

	Weekdays	alpha2.pe	alpha2.pm	alpha2.pf	beta2.pe	beta2.pm	beta2.pf	juliet2.pm	juliet2.pf
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2025-02-13	Thursday		1.25			0.75		0.75	
2025-02-14	Friday		1.25			0.75		0.75	
2025-02-15	Saturday								
2025-02-16	Sunday								
2025-02-17	Monday		1.25			0.75		0.75	
2025-02-18	Tuesday		1.25			0.75		0.75	
2025-02-19	Wednesday		1.25			0.75		0.75	
2025-02-20	Thursday		1.25			0.75		0.75	
2025-02-21	Friday		1.25			0.75		0.75	
2025-02-22	Saturday								
2025-02-23	Sunday								
2025-02-24	Monday		1.25			0.75		0.75	
2025-02-25	Tuesday		1.25			0.75		0.75	
2025-02-26	Wednesday		1.25			0.75		0.75	
2025-02-27	Thursday		1.25			0.75		0.75	
2025-02-28	Friday		1.25			0.75		0.75	
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2025-03-02	Sunday								
2025-03-03	Monday		1.25			0.75		0.75	
2025-03-04	Tuesday		1.25			0.75		0.75	
2025-03-05	Wednesday		1.25			0.75		0.75	
2025-03-06	Thursday		1.25			0.75		0.75	
2025-03-07	Friday		1.25			0.75		0.75	
2025-03-08	Saturday								
2025-03-09	Sunday								
2025-03-10	Monday		1.25			0.75		0.75	
2025-03-11	Tuesday		1.25			0.75		0.75	
2025-03-12	Wednesday		1.25			0.75		0.75	
2025-03-13	Thursday		1.00			0.75		0.75	
2025-03-14	Friday		1.00			0.75		0.75	
2025-03-15	Saturday								
2025-03-16	Sunday								
2025-03-17	Monday		1.00			0.75		0.75	
2025-03-18	Tuesday		1.00			0.75		0.75	
2025-03-19	Wednesday		1.00			0.75		0.75	
2025-03-20	Thursday			1.25		0.75		0.75	
2025-03-21	Friday			1.25		0.75		0.75	
2025-03-22	Saturday								
2025-03-23	Sunday								
2025-03-24	Monday			1.25		0.75			1.50
2025-03-25	Tuesday			1.25		0.75			1.50
2025-03-26	Wednesday			1.00		0.75			1.50
2025-03-27	Thursday			1.00		0.75			1.50
2025-03-28	Friday			1.00		0.75			1.50
2025-03-29	Saturday								
2025-03-30	Sunday								
2025-03-31	Monday			1.00		0.75			1.25
2025-04-01	Tuesday			1.00		0.75			1.25
2025-04-02	Wednesday					0.75			
2025-04-03	Thursday					0.75			
2025-04-04	Friday					0.75			
2025-04-05	Saturday								
2025-04-06	Sunday								
2025-04-07	Monday					0.75			
2025-04-08	Tuesday					0.75			
2025-04-09	Wednesday					0.75			
2025-04-10	Thursday					0.75			
2025-04-11	Friday					0.75			
2025-04-12	Saturday								
2025-04-13	Sunday								
2025-04-14	Monday					0.75			
2025-04-15	Tuesday					0.75			
2025-04-16	Wednesday					0.50			
2025-04-17	Thursday					0.50			

	Weekdays	alpha2.pe	alpha2.pm	alpha2.pf	beta2.pe	beta2.pm	beta2.pf	juliet2.pm	juliet2.pf
2025-04-18	Friday					0.50			
2025-04-19	Saturday								
2025-04-20	Sunday								
2025-04-21	Monday					0.50			
2025-04-22	Tuesday					0.50			
2025-04-23	Wednesday					0.50			
2025-04-24	Thursday					0.50			
2025-04-25	Friday					0.50			
2025-04-26	Saturday								
2025-04-27	Sunday								
2025-04-28	Monday					0.50			
2025-04-29	Tuesday					0.50			
2025-04-30	Wednesday					0.50			
2025-05-01	Thursday								
2025-05-02	Friday					0.50			
2025-05-03	Saturday								
2025-05-04	Sunday								
2025-05-05	Monday					0.50			
2025-05-06	Tuesday					0.50			
2025-05-07	Wednesday					0.50			
2025-05-08	Thursday					0.50			
2025-05-09	Friday					0.50			
2025-05-10	Saturday								
2025-05-11	Sunday								
2025-05-12	Monday					0.50			
2025-05-13	Tuesday					0.50			
2025-05-14	Wednesday					0.50			
2025-05-15	Thursday					0.50			
2025-05-16	Friday					0.50			
2025-05-17	Saturday								
2025-05-18	Sunday								
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2025-05-20	Tuesday					0.50			
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2025-05-22	Thursday					0.50			
2025-05-23	Friday					0.50			
2025-05-24	Saturday								
2025-05-25	Sunday								
2025-05-26	Monday					0.50			
2025-05-27	Tuesday					0.50			
2025-05-28	Wednesday					0.50			
2025-05-29	Thursday					0.50			
2025-05-30	Friday					0.50			
2025-05-31	Saturday								
2025-06-01	Sunday								
2025-06-02	Monday					0.50			
2025-06-03	Tuesday					0.50			
2025-06-04	Wednesday					0.50			
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2025-06-06	Friday					0.50			
2025-06-07	Saturday								
2025-06-08	Sunday								
2025-06-09	Monday					0.50			
2025-06-10	Tuesday					0.50			
2025-06-11	Wednesday					0.50			
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2025-06-14	Saturday								
2025-06-15	Sunday								
2025-06-16	Monday					0.50			
2025-06-17	Tuesday					0.50			
2025-06-18	Wednesday					0.50			
2025-06-19	Thursday					0.50			
2025-06-20	Friday					0.50			
2025-06-21	Saturday								

	Weekdays	alpha2.pe	alpha2.pm	alpha2.pf	beta2.pe	beta2.pm	beta2.pf	juliet2.pm	juliet2.pf
2025-06-22	Sunday								
2025-06-23	Monday					0.50			
2025-06-24	Tuesday					0.50			
2025-06-25	Wednesday					0.50			
2025-06-26	Thursday					0.50			
2025-06-27	Friday					0.50			
2025-06-28	Saturday								
2025-06-29	Sunday								
2025-06-30	Monday					0.50			
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2025-07-02	Wednesday					0.50			
2025-07-03	Thursday					0.50			
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2025-07-06	Sunday								
2025-07-07	Monday					0.50			
2025-07-08	Tuesday					0.50			
2025-07-09	Wednesday					0.50			
2025-07-10	Thursday					0.50			
2025-07-11	Friday					0.50			
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2025-07-13	Sunday								
2025-07-14	Monday					0.50			
2025-07-15	Tuesday					0.50			
2025-07-16	Wednesday						3.00		
2025-07-17	Thursday						3.00		
2025-07-18	Friday						3.00		
2025-07-19	Saturday								
2025-07-20	Sunday								
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2025-07-23	Wednesday						3.00		
2025-07-24	Thursday						2.75		
2025-07-25	Friday						2.75		
2025-07-26	Saturday								
2025-07-27	Sunday								
2025-07-28	Monday						2.75		
2025-07-29	Tuesday						2.75		
2025-07-30	Wednesday						2.75		
2025-07-31	Thursday						2.75		
2025-08-01	Friday						2.75		
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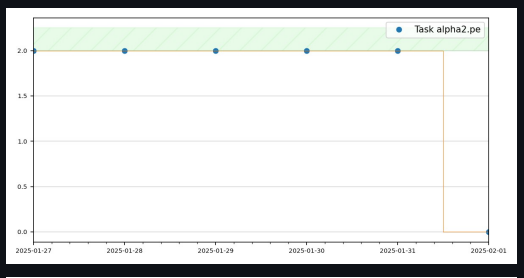
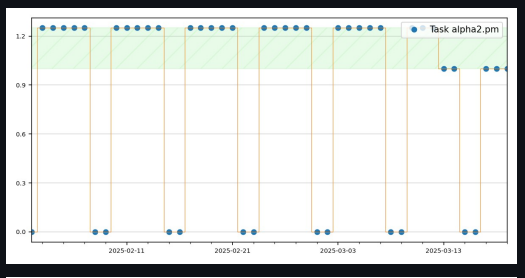
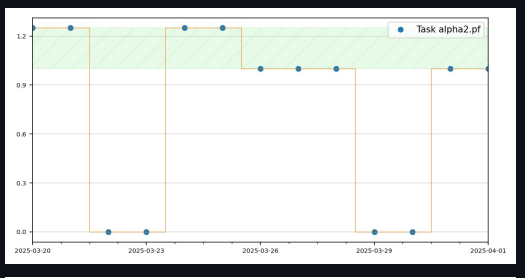
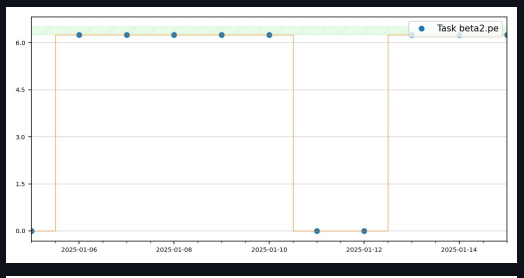
2025-08-03	Sunday								
2025-08-04	Monday						2.75		

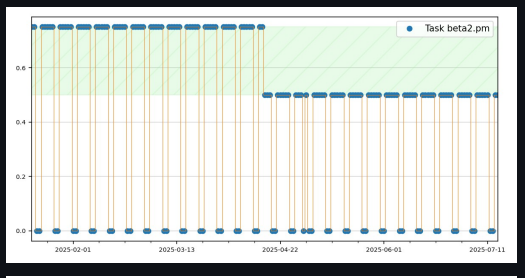
Show schedule as Streamlit table

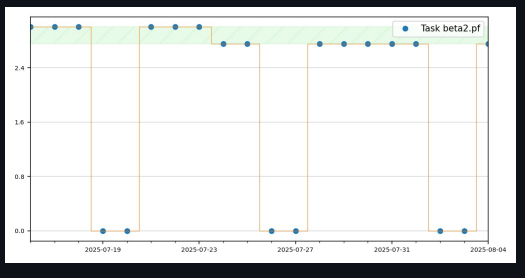


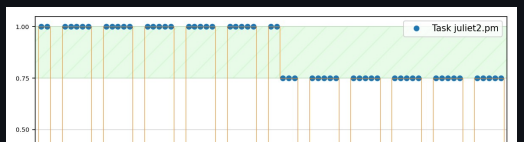


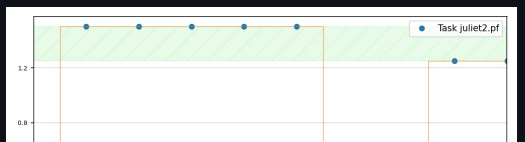


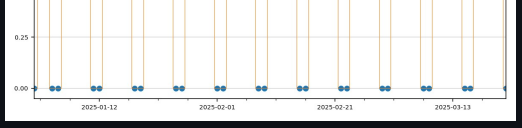












Solver output at 28 January 2025, 13:55:35 PM

```
HiGHS 1.8.1:   tech:outlev = 1
Running HiGHS 1.8.1 (git hash: 4a7f24a): Copyright (c) 2024 HiGHS under MIT licence terms
Coefficient ranges:
  Matrix [1e+00, 6e+00]
  Cost   [1e+00, 1e+00]
  Bound  [2e+00, 3e+02]
  RHS    [4e+01, 3e+02]
Presolving model
6 rows, 248 cols, 248 nonzeros  0s
6 rows, 248 cols, 248 nonzeros  0s

Solving MIP model with:
   6 rows
   248 cols (0 binary, 248 integer, 0 implied int., 0 continuous)
   248 nonzeros
MIP-Timing:       0.0017 - starting analytic centre calculation

Src: B => Branching; C => Central rounding; F => Feasibility pump; H => Heuristic; L => Sub-MIP;
     P => Empty MIP; R => Randomized rounding; S => Solve LP; T => Evaluate node; U => Unbounded;
     z => Trivial zero; l => Trivial lower; u => Trivial upper; p => Trivial point

        Nodes      |    B&B Tree     |            Objective Bounds              |  Dynamic Constraints |       Work
Src  Proc. InQueue |  Leaves   Expl. | BestBound       BestSol              Gap |   Cuts   InLp Confl. | LpIters     Time

         0       0         0   0.00%   2768.152322     inf                  inf        0      0      0         0     0.0s
 T       0       0         0   0.00%   2768.152322     3147.004144        12.04%       0      0      0         6     0.0s
         1       0         1 100.00%   3147.004144     3147.004144         0.00%       0      0      0         6     0.0s

Solving report
  Status            Optimal
  Primal bound      3147.00414402
  Dual bound        3147.00414402
  Gap               0% (tolerance: 0.01%)
  P-D integral      1.6647160037e-06
  Solution status   feasible
                    3147.00414402 (objective)
                    0 (bound viol.)
                    0 (int. viol.)
                    0 (row viol.)
  Timing            0.00 (total)
                    0.00 (presolve)
                    0.00 (solve)
                    0.00 (postsolve)
  Max sub-MIP depth 0
  Nodes             1
  Repair LPs        0 (0 feasible; 0 iterations)
  LP iterations     6 (total)
                    0 (strong br.)
                    0 (separation)
                    0 (heuristics)
HiGHS 1.8.1: optimal solution; objective 3147.004144
6 simplex iterations
1 branching nodes

"option abs_boundtol 7.105427357601002e-15;"
or "option rel_boundtol 1.6791121753260547e-16;"
will change deduced dual values.
```

Elapsed time for chart creation

Chart title	Chart short name	Number of calls	Elapsed time [s]	Average time per chart [s]
Hours per day stacked	simg	1	1.417	1.417
Plot task with its constrains	bimg	8	0.873	0.109
Hours per day	himg	1	0.489	0.489
Tasks per day	timg	1	0.317	0.317
Task's Gantt Chart	gimg	1	0.125	0.125
Invoicing Periods Workload	wimg	1	0.121	0.121