MPS 文件数学模型提取

完整版

MPS Extractor

2025 年 7 月 8 日

目录

1 模型概览

文件名: `ran13x13.mps`
模型名: RAM13X13
变量总数: 338
约束总数: 195
优化方向: Minimize

2 目标函数

目标函数摘要:

$$\min \quad Z = \sum_i c_i Y_i + \sum_j d_j X_j \tag{1}$$

Y 变量: 169 个，系数范围 [84, 298]
X 变量: 169 个，系数范围 [1, 10]

完整目标函数:

$$\begin{aligned}
\min \quad Z = {} & 100Y_{167} + 129Y_0 + 138Y_1 && (2)\\
& + 230Y_2 + 164Y_3 + 296Y_4 && (3)\\
& + 231Y_5 + 107Y_6 + 263Y_7 && (4)\\
& + 195Y_8 + 289Y_9 + 164Y_{10} && (5)\\
& + 217Y_{11} + 144Y_{12} + 103Y_{13} && (6)\\
& + 84Y_{14} + 165Y_{15} + 251Y_{16} && (7)\\
& + 161Y_{17} + 92Y_{18} + 131Y_{19} && (8)\\
& + 229Y_{20} + 143Y_{21} + 237Y_{22} && (9)\\
& + 101Y_{23} + 157Y_{24} + 230Y_{25} && (10)\\
& + 212Y_{26} + 247Y_{27} + 282Y_{28} && (11)\\
& + 114Y_{29} + 150Y_{30} + 240Y_{31} && (12)\\
& + 123Y_{32} + 293Y_{33} + 256Y_{34} && (13)\\
& + 243Y_{35} + 204Y_{36} + 201Y_{37} && (14)\\
& + 185Y_{38} + 248Y_{39} + 292Y_{40} && (15)\\
& + 222Y_{41} + 234Y_{42} + 244Y_{43} && (16)\\
& + 100Y_{44} + 195Y_{45} + 209Y_{46} && (17)\\
& + 218Y_{47} + 140Y_{48} + 101Y_{49} && (18)\\
& + 283Y_{50} + 200Y_{51} + 94Y_{52} && (19)\\
& + 214Y_{53} + 286Y_{54} + 136Y_{55} && (20)\\
& + 193Y_{56} + 255Y_{57} + 181Y_{58} && (21)\\
& + 89Y_{59} + 120Y_{60} + 104Y_{61} && (22)\\
& + 298Y_{62} + 234Y_{63} + 127Y_{64} && (23)\\
& + 201Y_{65} + 231Y_{66} + 98Y_{67} && (24)\\
& + 226Y_{68} + 133Y_{69} + 205Y_{70} && (25)
\end{aligned}$$

$$+ 197Y_{71} + 297Y_{72} + 276Y_{73} \tag{26}$$

$$+ 111Y_{74} + 233Y_{75} + 271Y_{76} \tag{27}$$

$$+ 171Y_{77} + 105Y_{78} + 168Y_{79} \tag{28}$$

$$+ 261Y_{80} + 277Y_{81} + 291Y_{82} \tag{29}$$

$$+ 243Y_{83} + 190Y_{84} + 176Y_{85} \tag{30}$$

$$+ 138Y_{86} + 203Y_{87} + 157Y_{88} \tag{31}$$

$$+ 85Y_{89} + 211Y_{90} + 231Y_{91} \tag{32}$$

$$+ 214Y_{92} + 84Y_{93} + 127Y_{94} \tag{33}$$

$$+ 256Y_{95} + 89Y_{96} + 196Y_{97} \tag{34}$$

$$+ 155Y_{98} + 159Y_{99} + 194Y_{100} \tag{35}$$

$$+ 141Y_{101} + 100Y_{102} + 263Y_{103} \tag{36}$$

$$+ 89Y_{104} + 93Y_{105} + 282Y_{106} \tag{37}$$

$$+ 127Y_{107} + 275Y_{108} + 191Y_{109} \tag{38}$$

$$+ 272Y_{110} + 180Y_{111} + 108Y_{112} \tag{39}$$

$$+ 147Y_{113} + 202Y_{114} + 228Y_{115} \tag{40}$$

$$+ 267Y_{116} + 124Y_{117} + 173Y_{118} \tag{41}$$

$$+ 164Y_{119} + 112Y_{120} + 264Y_{121} \tag{42}$$

$$+ 281Y_{122} + 187Y_{123} + 283Y_{124} \tag{43}$$

$$+ 226Y_{125} + 116Y_{126} + 173Y_{127} \tag{44}$$

$$+ 163Y_{128} + 112Y_{129} + 104Y_{130} \tag{45}$$

$$+ 179Y_{131} + 253Y_{132} + 261Y_{133} \tag{46}$$

$$+ 284Y_{134} + 272Y_{135} + 200Y_{136} \tag{47}$$

$$+ 112Y_{137} + 269Y_{138} + 213Y_{139} \tag{48}$$

$$+ 194Y_{140} + 188Y_{141} + 117Y_{142} \tag{49}$$

$$+ 242Y_{143} + 256Y_{144} + 255Y_{145} \tag{50}$$

$$+ 188Y_{146} + 272Y_{147} + 98Y_{148} \tag{51}$$

$$+ 293Y_{149} + 288Y_{150} + 268Y_{151} \tag{52}$$

$$+ 228Y_{152} + 126Y_{153} + 284Y_{154} \tag{53}$$

$$+ 147Y_{155} + 105Y_{156} + 161Y_{157} \tag{54}$$

$$+ 90Y_{158} + 108Y_{159} + 213Y_{160} \tag{55}$$

$$+ 179Y_{161} + 148Y_{162} + 158Y_{163} \tag{56}$$

$$+ 126Y_{164} + 189Y_{165} + 129Y_{166} \tag{57}$$

$$+ 258Y_{168} + 7X_0 + 1X_1 \tag{58}$$

$$+ 3X_2 + 3X_3 + 3X_4 \tag{59}$$

$$+ 8X_5 + 9X_6 + 6X_7 \tag{60}$$

$$+ 10X_8 + 9X_9 + 3X_{10} \tag{61}$$

$$+ 7X_{11} + 9X_{12} + 7X_{13} \tag{62}$$

$$+ 4X_{14} + 4X_{15} + 8X_{16} \tag{63}$$

$$+ 8X_{17} + 9X_{18} + 10X_{19} \tag{64}$$

$$+ 5X_{20} + 9X_{21} + 9X_{22} \tag{65}$$

$$+ 6X_{23} + 10X_{24} + 4X_{25} \tag{66}$$

$$+ 1X_{26} + 10X_{27} + 4X_{28} \tag{67}$$

$$+ 7X_{29} + 3X_{30} + 1X_{31} \tag{68}$$

$$+ 1X_{32} + 5X_{33} + 1X_{34} \tag{69}$$

$$+ 4X_{35} + 6X_{36} + 4X_{37} \tag{70}$$

$$+ 9X_{38} + 10X_{39} + 6X_{40} \tag{71}$$

$$+ 10X_{41} + 10X_{42} + 3X_{43} \tag{72}$$

$$+ 5X_{44} + 9X_{45} + 9X_{46} \tag{73}$$

$$+ 7X_{47} + 2X_{48} + 6X_{49} \tag{74}$$

$$+ 3X_{50} + 3X_{51} + 1X_{52} \tag{75}$$

$$+ 4X_{53} + 10X_{54} + 4X_{55} \tag{76}$$

$$+ 8X_{56} + 5X_{57} + 1X_{58} \tag{77}$$

$$+ 8X_{59} + 9X_{60} + 9X_{61} \tag{78}$$

$$+ 2X_{62} + 6X_{63} + 4X_{64} \tag{79}$$

$$+ 4X_{65} + 8X_{66} + 4X_{67} \tag{80}$$

$$+ 1X_{68} + 9X_{69} + 8X_{70} \tag{81}$$

$$+ 2X_{71} + 2X_{72} + 7X_{73} \tag{82}$$

$$+ 5X_{74} + 6X_{75} + 2X_{76} \tag{83}$$

$$+ 9X_{77} + 8X_{78} + 1X_{79} \tag{84}$$

$$+ 10X_{80} + 8X_{81} + 6X_{82} \tag{85}$$

$$+ 4X_{83} + 6X_{84} + 5X_{85} \tag{86}$$

$$+ 1X_{86} + 5X_{87} + 8X_{88} \tag{87}$$

$$+ 4X_{89} + 1X_{90} + 4X_{91} \tag{88}$$

$$+ 4X_{92} + 4X_{93} + 4X_{94} \tag{89}$$

$$+ 1X_{95} + 8X_{96} + 1X_{97} \tag{90}$$

$$+ 2X_{98} + 6X_{99} + 9X_{100} \tag{91}$$

$$+ 2X_{101} + 7X_{102} + 6X_{103} \tag{92}$$

$$+ 7X_{104} + 10X_{105} + 4X_{106} \tag{93}$$

$$+ 3X_{107} + 9X_{108} + 6X_{109} \tag{94}$$

$$+ 2X_{110} + 2X_{111} + 3X_{112} \tag{95}$$

$$+ 7X_{113} + 5X_{114} + 5X_{115} \tag{96}$$

$$+ 5X_{116} + 1X_{117} + 7X_{118} \tag{97}$$

$$+ 3X_{119} + 3X_{120} + 7X_{121} \tag{98}$$

$$+ 3X_{122} + 7X_{123} + 2X_{124} \tag{99}$$

$$+ 1X_{125} + 6X_{126} + 7X_{127} \tag{100}$$

$$+ 5X_{128} + 5X_{129} + 9X_{130} \tag{101}$$

$$+ 3X_{131} + 4X_{132} + 10X_{133} \tag{102}$$

$$+ 1X_{134} + 9X_{135} + 3X_{136} \tag{103}$$

$$+ 5X_{137} + 1X_{138} + 2X_{139} \tag{104}$$
$$+ 8X_{140} + 6X_{141} + 6X_{142} \tag{105}$$
$$+ 5X_{143} + 1X_{144} + 1X_{145} \tag{106}$$
$$+ 7X_{146} + 9X_{147} + 3X_{148} \tag{107}$$
$$+ 5X_{149} + 9X_{150} + 5X_{151} \tag{108}$$
$$+ 4X_{152} + 5X_{153} + 2X_{154} \tag{109}$$
$$+ 7X_{155} + 10X_{156} + 7X_{157} \tag{110}$$
$$+ 8X_{158} + 2X_{159} + 2X_{160} \tag{111}$$
$$+ 3X_{161} + 8X_{162} + 9X_{163} \tag{112}$$
$$+ 5X_{164} + 6X_{165} + 7X_{166} \tag{113}$$
$$+ 4X_{167} + 3X_{168}$$

3 约束条件

3.1 等式约束 (26 个)

$$X_0 + X_1 + X_2 + X_3 + X_4 + X_5 \tag{114}$$
$$+ X_6 + X_7 + X_8 + X_9 + X_{10} + X_{11} \tag{115}$$
$$+ X_{12} = +14 \quad \text{(A0)} \tag{116}$$
$$X_{13} + X_{14} + X_{15} + X_{16} + X_{17} + X_{18} \tag{117}$$
$$+ X_{19} + X_{20} + X_{21} + X_{22} + X_{23} + X_{24} \tag{118}$$
$$+ X_{25} = +21 \quad \text{(A1)} \tag{119}$$
$$X_{26} + X_{27} + X_{28} + X_{29} + X_{30} + X_{31} \tag{120}$$
$$+ X_{32} + X_{33} + X_{34} + X_{35} + X_{36} + X_{37} \tag{121}$$
$$+ X_{38} = +11 \quad \text{(A2)} \tag{122}$$
$$X_{39} + X_{40} + X_{41} + X_{42} + X_{43} + X_{44} \tag{123}$$
$$+ X_{45} + X_{46} + X_{47} + X_{48} + X_{49} + X_{50} \tag{124}$$
$$+ X_{51} = +28 \quad \text{(A3)} \tag{125}$$
$$X_{52} + X_{53} + X_{54} + X_{55} + X_{56} + X_{57} \tag{126}$$
$$+ X_{58} + X_{59} + X_{60} + X_{61} + X_{62} + X_{63} \tag{127}$$
$$+ X_{64} = +13 \quad \text{(A4)} \tag{128}$$
$$X_{65} + X_{66} + X_{67} + X_{68} + X_{69} + X_{70} \tag{129}$$
$$+ X_{71} + X_{72} + X_{73} + X_{74} + X_{75} + X_{76} \tag{130}$$
$$+ X_{77} = +7 \quad \text{(A5)} \tag{131}$$
$$X_{78} + X_{79} + X_{80} + X_{81} + X_{82} + X_{83} \tag{132}$$
$$+ X_{84} + X_{85} + X_{86} + X_{87} + X_{88} + X_{89} \tag{133}$$
$$+ X_{90} = +21 \quad \text{(A6)} \tag{134}$$
$$X_{91} + X_{92} + X_{93} + X_{94} + X_{95} + X_{96} \tag{135}$$
$$+ X_{97} + X_{98} + X_{99} + X_{100} + X_{101} + X_{102} \tag{136}$$
$$+ X_{103} = +7 \quad \text{(A7)} \tag{137}$$
$$= +18 \quad \text{(C\_9)} \tag{138}$$

$$= +12 \quad \text{(C\_10)} \tag{139}$$

$$X_{142} = +16 \quad \text{(C\_11)} \tag{140}$$

$$X_{155} = +12 \quad \text{(C\_12)} \tag{141}$$

$$X_{168} = +20 \quad \text{(C\_13)} \tag{142}$$

$$X_0 + X_{13} + X_{26} + X_{39} + X_{52} + X_{65} \tag{143}$$

$$+ X_{78} + X_{91} + X_{104} + X_{117} + X_{130} + X_{143} \tag{144}$$

$$+ X_{156} = +20 \quad \text{(B0)} \tag{145}$$

$$X_1 + X_{14} + X_{27} + X_{40} + X_{53} + X_{66} \tag{146}$$

$$+ X_{79} + X_{92} + X_{105} + X_{118} + X_{131} + X_{144} \tag{147}$$

$$+ X_{157} = +28 \quad \text{(B1)} \tag{148}$$

$$X_2 + X_{15} + X_{28} + X_{41} + X_{54} + X_{67} \tag{149}$$

$$+ X_{80} + X_{93} + X_{106} + X_{119} + X_{132} + X_{145} \tag{150}$$

$$+ X_{158} = +13 \quad \text{(B2)} \tag{151}$$

$$X_3 + X_{16} + X_{29} + X_{42} + X_{55} + X_{68} \tag{152}$$

$$+ X_{81} + X_{94} + X_{107} + X_{120} + X_{133} + X_{146} \tag{153}$$

$$+ X_{159} = +6 \quad \text{(B3)} \tag{154}$$

$$X_4 + X_{17} + X_{30} + X_{43} + X_{56} + X_{69} \tag{155}$$

$$+ X_{82} + X_{95} + X_{108} + X_{121} + X_{134} + X_{147} \tag{156}$$

$$+ X_{160} = +3 \quad \text{(B4)} \tag{157}$$

$$X_5 + X_{18} + X_{31} + X_{44} + X_{57} + X_{70} \tag{158}$$

$$+ X_{83} + X_{96} + X_{109} + X_{122} + X_{135} + X_{148} \tag{159}$$

$$+ X_{161} = +43 \quad \text{(B5)} \tag{160}$$

$$X_6 + X_{19} + X_{32} + X_{45} + X_{58} + X_{71} \tag{161}$$

$$+ X_{84} + X_{97} + X_{110} + X_{123} + X_{136} + X_{149} \tag{162}$$

$$+ X_{162} = +4 \quad \text{(B6)} \tag{163}$$

$$X_7 + X_{20} + X_{33} + X_{46} + X_{59} + X_{72} \tag{164}$$

$$+ X_{85} + X_{98} + X_{111} + X_{124} + X_{137} + X_{150} \tag{165}$$

$$+ X_{163} = +1 \quad \text{(B7)} \tag{166}$$

$$X_8 + X_{21} + X_{34} + X_{47} + X_{60} + X_{73} \tag{167}$$

$$+ X_{86} + X_{99} + X_{112} + X_{125} + X_{138} + X_{151} \tag{168}$$

$$+ X_{164} = +34 \quad \text{(B8)} \tag{169}$$

$$X_9 + X_{22} + X_{35} + X_{48} + X_{61} + X_{74} \tag{170}$$

$$+ X_{87} + X_{100} + X_{113} + X_{126} + X_{139} + X_{152} \tag{171}$$

$$+ X_{165} = +32 \quad \text{(B9)} \tag{172}$$

$$= +2 \quad \text{(C\_24)} \tag{173}$$

$$= +9 \quad \text{(C\_25)} \tag{174}$$

$$= +5 \quad \text{(C\_26)} \tag{175}$$

$$\tag{176}$$

3.2 不等式约束 (177 个)

$$X_0 - 14Y_0 \leq +0 \quad \text{(G0)} \tag{177}$$

$$X_{1} - 14Y_{1} \leq +0 \quad \text{(G1)} \quad (178)$$

$$X_{2} - 13Y_{2} \leq +0 \quad \text{(G2)} \quad (179)$$

$$X_{3} - 6Y_{3} \leq +0 \quad \text{(G3)} \quad (180)$$

$$X_{4} - 3Y_{4} \leq +0 \quad \text{(G4)} \quad (181)$$

$$X_{5} - 14Y_{5} \leq +0 \quad \text{(G5)} \quad (182)$$

$$X_{6} - 4Y_{6} \leq +0 \quad \text{(G6)} \quad (183)$$

$$X_{7} - Y_{7} \leq +0 \quad \text{(G7)} \quad (184)$$

$$X_{8} - 14Y_{8} \leq +0 \quad \text{(G8)} \quad (185)$$

$$X_{9} - 14Y_{9} \leq +0 \quad \text{(G9)} \quad (186)$$

$$X_{10} - 2Y_{10} \leq +0 \quad \text{(G10)} \quad (187)$$

$$X_{11} - 9Y_{11} \leq +0 \quad \text{(G11)} \quad (188)$$

$$X_{12} - 5Y_{12} \leq +0 \quad \text{(G12)} \quad (189)$$

$$X_{13} - 20Y_{13} \leq +0 \quad \text{(G13)} \quad (190)$$

$$X_{14} - 21Y_{14} \leq +0 \quad \text{(G14)} \quad (191)$$

$$X_{15} - 13Y_{15} \leq +0 \quad \text{(G15)} \quad (192)$$

$$X_{16} - 6Y_{16} \leq +0 \quad \text{(G16)} \quad (193)$$

$$X_{17} - 3Y_{17} \leq +0 \quad \text{(G17)} \quad (194)$$

$$X_{18} - 21Y_{18} \leq +0 \quad \text{(G18)} \quad (195)$$

$$X_{19} - 4Y_{19} \leq +0 \quad \text{(G19)} \quad (196)$$

$$X_{20} - Y_{20} \leq +0 \quad \text{(G20)} \quad (197)$$

$$X_{21} - 21Y_{21} \leq +0 \quad \text{(G21)} \quad (198)$$

$$X_{22} - 21Y_{22} \leq +0 \quad \text{(G22)} \quad (199)$$

$$X_{23} - 2Y_{23} \leq +0 \quad \text{(G23)} \quad (200)$$

$$X_{24} - 9Y_{24} \leq +0 \quad \text{(G24)} \quad (201)$$

$$X_{25} - 5Y_{25} \leq +0 \quad \text{(G25)} \quad (202)$$

$$X_{26} - 11Y_{26} \leq +0 \quad \text{(G26)} \quad (203)$$

$$X_{27} - 11Y_{27} \leq +0 \quad \text{(G27)} \quad (204)$$

$$X_{28} - 11Y_{28} \leq +0 \quad \text{(G28)} \quad (205)$$

$$X_{29} - 6Y_{29} \leq +0 \quad \text{(G29)} \quad (206)$$

$$X_{30} - 3Y_{30} \leq +0 \quad \text{(G30)} \quad (207)$$

$$X_{31} - 11Y_{31} \leq +0 \quad \text{(G31)} \quad (208)$$

$$X_{32} - 4Y_{32} \leq +0 \quad \text{(G32)} \quad (209)$$

$$X_{33} - Y_{33} \leq +0 \quad \text{(G33)} \quad (210)$$

$$X_{34} - 11Y_{34} \leq +0 \quad \text{(G34)} \quad (211)$$

$$X_{35} - 11Y_{35} \leq +0 \quad \text{(G35)} \quad (212)$$

$$X_{36} - 2Y_{36} \leq +0 \quad \text{(G36)} \quad (213)$$

$$X_{37} - 9Y_{37} \leq +0 \quad \text{(G37)} \quad (214)$$

$$X_{38} - 5Y_{38} \leq +0 \quad \text{(G38)} \quad (215)$$

$$X_{39} - 20Y_{39} \leq +0 \quad \text{(G39)} \quad (216)$$

$$X_{40} - 28Y_{40} \leq +0 \quad \text{(G40)} \quad (217)$$

$$X_{41} - 13Y_{41} \leq +0 \quad \text{(G41)} \quad (218)$$

$$X_{42} - 6Y_{42} \leq +0 \quad \text{(G42)} \quad (219)$$

$$X_{43} - 3Y_{43} \leq +0 \quad \text{(G43)} \quad (220)$$

$$X_{44} - 28Y_{44} \leq +0 \quad \text{(G44)} \quad (221)$$

$$X_{45} - 4Y_{45} \leq +0 \quad \text{(G45)} \quad (222)$$

$$X_{46} - Y_{46} \leq +0 \quad \text{(G46)} \quad (223)$$

$$X_{47} - 28Y_{47} \leq +0 \quad \text{(G47)} \quad (224)$$

$$X_{48} - 28Y_{48} \leq +0 \quad \text{(G48)} \quad (225)$$

$$X_{49} - 2Y_{49} \leq +0 \quad \text{(G49)} \quad (226)$$

$$X_{50} - 9Y_{50} \leq +0 \quad \text{(G50)} \quad (227)$$

$$X_{51} - 5Y_{51} \leq +0 \quad \text{(G51)} \quad (228)$$

$$X_{52} - 13Y_{52} \leq +0 \quad \text{(G52)} \quad (229)$$

$$X_{53} - 13Y_{53} \leq +0 \quad \text{(G53)} \quad (230)$$

$$X_{54} - 13Y_{54} \leq +0 \quad \text{(G54)} \quad (231)$$

$$X_{55} - 6Y_{55} \leq +0 \quad \text{(G55)} \quad (232)$$

$$X_{56} - 3Y_{56} \leq +0 \quad \text{(G56)} \quad (233)$$

$$X_{57} - 13Y_{57} \leq +0 \quad \text{(G57)} \quad (234)$$

$$X_{58} - 4Y_{58} \leq +0 \quad \text{(G58)} \quad (235)$$

$$X_{59} - Y_{59} \leq +0 \quad \text{(G59)} \quad (236)$$

$$X_{60} - 13Y_{60} \leq +0 \quad \text{(G60)} \quad (237)$$

$$X_{61} - 13Y_{61} \leq +0 \quad \text{(G61)} \quad (238)$$

$$X_{62} - 2Y_{62} \leq +0 \quad \text{(G62)} \quad (239)$$

$$X_{63} - 9Y_{63} \leq +0 \quad \text{(G63)} \quad (240)$$

$$X_{64} - 5Y_{64} \leq +0 \quad \text{(G64)} \quad (241)$$

$$X_{65} - 7Y_{65} \leq +0 \quad \text{(G65)} \quad (242)$$

$$X_{66} - 7Y_{66} \leq +0 \quad \text{(G66)} \quad (243)$$

$$X_{67} - 7Y_{67} \leq +0 \quad \text{(G67)} \quad (244)$$

$$X_{68} - 6Y_{68} \leq +0 \quad \text{(G68)} \quad (245)$$

$$X_{69} - 3Y_{69} \leq +0 \quad \text{(G69)} \quad (246)$$

$$X_{70} - 7Y_{70} \leq +0 \quad \text{(G70)} \quad (247)$$

$$X_{71} - 4Y_{71} \leq +0 \quad \text{(G71)} \quad (248)$$

$$X_{72} - Y_{72} \leq +0 \quad \text{(G72)} \quad (249)$$

$$X_{73} - 7Y_{73} \leq +0 \quad \text{(G73)} \quad (250)$$

$$X_{74} - 7Y_{74} \leq +0 \quad \text{(G74)} \quad (251)$$

$$X_{75} - 2Y_{75} \leq +0 \quad \text{(G75)} \quad (252)$$

$$X_{76} - 7Y_{76} \leq +0 \quad \text{(G76)} \quad (253)$$

$$X_{77} - 5Y_{77} \leq +0 \quad \text{(G77)} \quad (254)$$

$$X_{78} - 20Y_{78} \leq +0 \quad \text{(G78)} \quad (255)$$

$$X_{79} - 21Y_{79} \leq +0 \quad \text{(G79)} \quad (256)$$

$$X_{80} - 13Y_{80} \leq +0 \quad \text{(G80)} \quad (257)$$

$$X_{81} - 6Y_{81} \leq +0 \quad \text{(G81)} \quad (258)$$

$$X_{82} - 3Y_{82} \leq +0 \quad \text{(G82)} \quad (259)$$

$$X_{83} - 21Y_{83} \leq +0 \quad \text{(G83)} \quad (260)$$

$$X_{84} - 4Y_{84} \leq +0 \quad \text{(G84)} \quad (261)$$

$$X_{85} - Y_{85} \leq +0 \quad \text{(G85)} \quad (262)$$

$$X_{86} - 21Y_{86} \leq +0 \quad \text{(G86)} \quad (263)$$

$$X_{87} - 21Y_{87} \leq +0 \quad \text{(G87)} \quad (264)$$

$$X_{88} - 2Y_{88} \leq +0 \quad \text{(G88)} \quad (265)$$

$$X_{89} - 9Y_{89} \leq +0 \quad \text{(G89)} \quad (266)$$

$$X_{90} - 5Y_{90} \leq +0 \quad \text{(G90)} \quad (267)$$

$$X_{91} - 7Y_{91} \leq +0 \quad \text{(G91)} \quad (268)$$

$$X_{92} - 7Y_{92} \leq +0 \quad \text{(G92)} \quad (269)$$

$$X_{93} - 7Y_{93} \leq +0 \quad \text{(G93)} \quad (270)$$

$$X_{94} - 6Y_{94} \leq +0 \quad \text{(G94)} \quad (271)$$

$$X_{95} - 3Y_{95} \leq +0 \quad \text{(G95)} \quad (272)$$

$$X_{96} - 7Y_{96} \leq +0 \quad \text{(G96)} \quad (273)$$

$$X_{97} - 4Y_{97} \leq +0 \quad \text{(G97)} \quad (274)$$

$$X_{98} - Y_{98} \leq +0 \quad \text{(G98)} \quad (275)$$

$$X_{99} - 7Y_{99} \leq +0 \quad \text{(G99)} \quad (276)$$

$$X_{100} - 7Y_{100} \leq +0 \quad \text{(G100)} \quad (277)$$

$$X_{101} - 2Y_{101} \leq +0 \quad \text{(G101)} \quad (278)$$

$$X_{102} - 7Y_{102} \leq +0 \quad \text{(G102)} \quad (279)$$

$$X_{103} - 5Y_{103} \leq +0 \quad \text{(G103)} \quad (280)$$

$$X_{104} - 18Y_{104} \leq +0 \quad \text{(G104)} \quad (281)$$

$$X_{105} - 18Y_{105} \leq +0 \quad \text{(G105)} \quad (282)$$

$$X_{106} - 13Y_{106} \leq +0 \quad \text{(G106)} \quad (283)$$

$$X_{107} - 6Y_{107} \leq +0 \quad \text{(G107)} \quad (284)$$

$$X_{108} - 3Y_{108} \leq +0 \quad \text{(G108)} \quad (285)$$

$$X_{109} - 18Y_{109} \leq +0 \quad \text{(G109)} \quad (286)$$

$$X_{110} - 4Y_{110} \leq +0 \quad \text{(G110)} \quad (287)$$

$$X_{111} - Y_{111} \leq +0 \quad \text{(G111)} \quad (288)$$

$$X_{112} - 18Y_{112} \leq +0 \quad \text{(G112)} \quad (289)$$

$$X_{113} - 18Y_{113} \leq +0 \quad \text{(G113)} \quad (290)$$

$$X_{114} - 2Y_{114} \leq +0 \quad \text{(G114)} \quad (291)$$

$$X_{115} - 9Y_{115} \leq +0 \quad \text{(G115)} \quad (292)$$

$$X_{116} - 5Y_{116} \leq +0 \quad \text{(G116)} \quad (293)$$

$$X_{117} - 12Y_{117} \leq +0 \quad \text{(G117)} \quad (294)$$

$$X_{118} - 12Y_{118} \leq +0 \quad \text{(G118)} \quad (295)$$

$$X_{119} - 12Y_{119} \leq +0 \quad \text{(G119)} \quad (296)$$

$$X_{120} - 6Y_{120} \leq +0 \quad \text{(G120)} \quad (297)$$

$$X_{121} - 3Y_{121} \leq +0 \quad \text{(G121)} \quad (298)$$

$$X_{122} - 12Y_{122} \leq +0 \quad \text{(G122)} \quad (299)$$

$$X_{123} - 4Y_{123} \leq +0 \quad \text{(G123)} \quad (300)$$

$$X_{124} - Y_{124} \leq +0 \quad \text{(G124)} \quad (301)$$

$$X_{125} - 12Y_{125} \leq +0 \quad \text{(G125)} \quad (302)$$

$$X_{126} - 12Y_{126} \leq +0 \quad \text{(G126)} \quad (303)$$

$$X_{127} - 2Y_{127} \leq +0 \quad \text{(G127)} \quad (304)$$
$$X_{128} - 9Y_{128} \leq +0 \quad \text{(G128)} \quad (305)$$
$$X_{129} - 5Y_{129} \leq +0 \quad \text{(G129)} \quad (306)$$
$$X_{130} - 16Y_{130} \leq +0 \quad \text{(G130)} \quad (307)$$
$$X_{131} - 16Y_{131} \leq +0 \quad \text{(G131)} \quad (308)$$
$$X_{132} - 13Y_{132} \leq +0 \quad \text{(G132)} \quad (309)$$
$$X_{133} - 6Y_{133} \leq +0 \quad \text{(G133)} \quad (310)$$
$$X_{134} - 3Y_{134} \leq +0 \quad \text{(G134)} \quad (311)$$
$$X_{135} - 16Y_{135} \leq +0 \quad \text{(G135)} \quad (312)$$
$$X_{136} - 4Y_{136} \leq +0 \quad \text{(G136)} \quad (313)$$
$$X_{137} - Y_{137} \leq +0 \quad \text{(G137)} \quad (314)$$
$$X_{138} - 16Y_{138} \leq +0 \quad \text{(G138)} \quad (315)$$
$$X_{139} - 16Y_{139} \leq +0 \quad \text{(G139)} \quad (316)$$
$$X_{140} - 2Y_{140} \leq +0 \quad \text{(G140)} \quad (317)$$
$$X_{141} - 9Y_{141} \leq +0 \quad \text{(G141)} \quad (318)$$
$$X_{142} - 5Y_{142} \leq +0 \quad \text{(G142)} \quad (319)$$
$$X_{143} - 12Y_{143} \leq +0 \quad \text{(G143)} \quad (320)$$
$$X_{144} - 12Y_{144} \leq +0 \quad \text{(G144)} \quad (321)$$
$$X_{145} - 12Y_{145} \leq +0 \quad \text{(G145)} \quad (322)$$
$$X_{146} - 6Y_{146} \leq +0 \quad \text{(G146)} \quad (323)$$
$$X_{147} - 3Y_{147} \leq +0 \quad \text{(G147)} \quad (324)$$
$$X_{148} - 12Y_{148} \leq +0 \quad \text{(G148)} \quad (325)$$
$$X_{149} - 4Y_{149} \leq +0 \quad \text{(G149)} \quad (326)$$
$$X_{150} - Y_{150} \leq +0 \quad \text{(G150)} \quad (327)$$
$$X_{151} - 12Y_{151} \leq +0 \quad \text{(G151)} \quad (328)$$
$$X_{152} - 12Y_{152} \leq +0 \quad \text{(G152)} \quad (329)$$
$$X_{153} - 2Y_{153} \leq +0 \quad \text{(G153)} \quad (330)$$
$$X_{154} - 9Y_{154} \leq +0 \quad \text{(G154)} \quad (331)$$
$$X_{155} - 5Y_{155} \leq +0 \quad \text{(G155)} \quad (332)$$
$$X_{156} - 20Y_{156} \leq +0 \quad \text{(G156)} \quad (333)$$
$$X_{157} - 20Y_{157} \leq +0 \quad \text{(G157)} \quad (334)$$
$$X_{158} - 13Y_{158} \leq +0 \quad \text{(G158)} \quad (335)$$
$$X_{159} - 6Y_{159} \leq +0 \quad \text{(G159)} \quad (336)$$
$$X_{160} - 3Y_{160} \leq +0 \quad \text{(G160)} \quad (337)$$
$$X_{161} - 20Y_{161} \leq +0 \quad \text{(G161)} \quad (338)$$
$$X_{162} - 4Y_{162} \leq +0 \quad \text{(G162)} \quad (339)$$
$$X_{163} - Y_{163} \leq +0 \quad \text{(G163)} \quad (340)$$
$$X_{164} - 20Y_{164} \leq +0 \quad \text{(G164)} \quad (341)$$
$$X_{165} - 20Y_{165} \leq +0 \quad \text{(G165)} \quad (342)$$
$$X_{166} - 2Y_{166} \leq +0 \quad \text{(G166)} \quad (343)$$
$$X_{167} - 9Y_{167} \leq +0 \quad \text{(G167)} \quad (344)$$
$$X_{168} - 5Y_{168} \leq +0 \quad \text{(G168)} \quad (345)$$

(346)

4 变量定义

4.1 二元变量 (169 个)

$$Y_i \in \{0,1\}, \quad i \in \{0,1,2,\ldots,168\} \tag{347}$$

二元变量示例 (显示前 50 个，共 169 个):

Y_{167}, Y_0, Y_1, Y_2, Y_3, Y_4, Y_5, Y_6, Y_7, Y_8,
Y_9, Y_{10}, Y_{11}, Y_{12}, Y_{13}, Y_{14}, Y_{15}, Y_{16}, Y_{17}, Y_{18},
Y_{19}, Y_{20}, Y_{21}, Y_{22}, Y_{23}, Y_{24}, Y_{25}, Y_{26}, Y_{27}, Y_{28},
Y_{29}, Y_{30}, Y_{31}, Y_{32}, Y_{33}, Y_{34}, Y_{35}, Y_{36}, Y_{37}, Y_{38},
Y_{39}, Y_{40}, Y_{41}, Y_{42}, Y_{43}, Y_{44}, Y_{45}, Y_{46}, Y_{47}, Y_{48}

... 还有 119 个二元变量

4.2 连续变量 (169 个)

所有连续变量均为非负实数:

$$X_j \geq 0, \quad j \in \{0,1,2,\ldots,168\} \tag{348}$$

连续变量说明: 模型包含 169 个连续决策变量，所有变量的取值范围均为非负实数域。