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: `ran17x17.mps`
模型名: RAN17X17
变量总数: 578
约束总数: 323
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: 289 个，系数范围 [10, 99]
X 变量: 289 个，系数范围 [1, 10]

完整目标函数:

$$\begin{aligned}
\min \quad Z = {} & 79Y_{287} + 40Y_0 + 88Y_1 && (2)\\
& + 87Y_2 + 40Y_3 + 73Y_4 && (3)\\
& + 29Y_5 + 44Y_6 + 17Y_7 && (4)\\
& + 58Y_8 + 92Y_9 + 81Y_{10} && (5)\\
& + 35Y_{11} + 88Y_{12} + 66Y_{13} && (6)\\
& + 21Y_{14} + 65Y_{15} + 43Y_{16} && (7)\\
& + 90Y_{17} + 40Y_{18} + 65Y_{19} && (8)\\
& + 50Y_{20} + 15Y_{21} + 58Y_{22} && (9)\\
& + 32Y_{23} + 82Y_{24} + 34Y_{25} && (10)\\
& + 25Y_{26} + 85Y_{27} + 33Y_{28} && (11)\\
& + 74Y_{29} + 35Y_{30} + 56Y_{31} && (12)\\
& + 64Y_{32} + 16Y_{33} + 31Y_{34} && (13)\\
& + 48Y_{35} + 90Y_{36} + 66Y_{37} && (14)\\
& + 90Y_{38} + 54Y_{39} + 65Y_{40} && (15)\\
& + 81Y_{41} + 90Y_{42} + 35Y_{43} && (16)\\
& + 51Y_{44} + 29Y_{45} + 56Y_{46} && (17)\\
& + 25Y_{47} + 67Y_{48} + 18Y_{49} && (18)\\
& + 73Y_{50} + 47Y_{51} + 52Y_{52} && (19)\\
& + 70Y_{53} + 36Y_{54} + 93Y_{55} && (20)\\
& + 27Y_{56} + 81Y_{57} + 25Y_{58} && (21)\\
& + 53Y_{59} + 17Y_{60} + 91Y_{61} && (22)\\
& + 29Y_{62} + 74Y_{63} + 32Y_{64} && (23)\\
& + 56Y_{65} + 69Y_{66} + 60Y_{67} && (24)\\
& + 37Y_{68} + 19Y_{69} + 89Y_{70} && (25)
\end{aligned}$$

$$+ 70Y_{71} + 10Y_{72} + 21Y_{73} \tag{26}$$

$$+ 39Y_{74} + 40Y_{75} + 97Y_{76} \tag{27}$$

$$+ 71Y_{77} + 31Y_{78} + 47Y_{79} \tag{28}$$

$$+ 42Y_{80} + 51Y_{81} + 14Y_{82} \tag{29}$$

$$+ 60Y_{83} + 54Y_{84} + 27Y_{85} \tag{30}$$

$$+ 96Y_{86} + 78Y_{87} + 70Y_{88} \tag{31}$$

$$+ 36Y_{89} + 75Y_{90} + 15Y_{91} \tag{32}$$

$$+ 95Y_{92} + 34Y_{93} + 70Y_{94} \tag{33}$$

$$+ 92Y_{95} + 12Y_{96} + 83Y_{97} \tag{34}$$

$$+ 50Y_{98} + 28Y_{99} + 43Y_{100} \tag{35}$$

$$+ 40Y_{101} + 66Y_{102} + 80Y_{103} \tag{36}$$

$$+ 34Y_{104} + 19Y_{105} + 44Y_{106} \tag{37}$$

$$+ 90Y_{107} + 62Y_{108} + 61Y_{109} \tag{38}$$

$$+ 59Y_{110} + 86Y_{111} + 35Y_{112} \tag{39}$$

$$+ 85Y_{113} + 23Y_{114} + 32Y_{115} \tag{40}$$

$$+ 34Y_{116} + 11Y_{117} + 53Y_{118} \tag{41}$$

$$+ 37Y_{119} + 23Y_{120} + 27Y_{121} \tag{42}$$

$$+ 76Y_{122} + 11Y_{123} + 71Y_{124} \tag{43}$$

$$+ 20Y_{125} + 37Y_{126} + 97Y_{127} \tag{44}$$

$$+ 23Y_{128} + 16Y_{129} + 44Y_{130} \tag{45}$$

$$+ 87Y_{131} + 67Y_{132} + 26Y_{133} \tag{46}$$

$$+ 20Y_{134} + 48Y_{135} + 94Y_{136} \tag{47}$$

$$+ 32Y_{137} + 91Y_{138} + 54Y_{139} \tag{48}$$

$$+ 80Y_{140} + 65Y_{141} + 68Y_{142} \tag{49}$$

$$+ 32Y_{143} + 31Y_{144} + 44Y_{145} \tag{50}$$

$$+ 45Y_{146} + 66Y_{147} + 93Y_{148} \tag{51}$$

$$+ 45Y_{149} + 44Y_{150} + 87Y_{151} \tag{52}$$

$$+ 94Y_{152} + 85Y_{153} + 96Y_{154} \tag{53}$$

$$+ 34Y_{155} + 24Y_{156} + 61Y_{157} \tag{54}$$

$$+ 38Y_{158} + 75Y_{159} + 65Y_{160} \tag{55}$$

$$+ 81Y_{161} + 91Y_{162} + 35Y_{163} \tag{56}$$

$$+ 95Y_{164} + 89Y_{165} + 41Y_{166} \tag{57}$$

$$+ 21Y_{167} + 90Y_{168} + 82Y_{169} \tag{58}$$

$$+ 88Y_{170} + 24Y_{171} + 68Y_{172} \tag{59}$$

$$+ 22Y_{173} + 95Y_{174} + 30Y_{175} \tag{60}$$

$$+ 63Y_{176} + 34Y_{177} + 76Y_{178} \tag{61}$$

$$+ 17Y_{179} + 74Y_{180} + 30Y_{181} \tag{62}$$

$$+ 94Y_{182} + 65Y_{183} + 18Y_{184} \tag{63}$$

$$+ 11Y_{185} + 25Y_{186} + 65Y_{187} \tag{64}$$

$$+ 41Y_{188} + 65Y_{189} + 90Y_{190} \tag{65}$$

$$+ 25Y_{191} + 85Y_{192} + 22Y_{193} \tag{66}$$

$$+ 66Y_{194} + 69Y_{195} + 44Y_{196} \tag{67}$$

$$+ 48Y_{197} + 54Y_{198} + 58Y_{199} \tag{68}$$

$$+ 35Y_{200} + 10Y_{201} + 70Y_{202} \tag{69}$$

$$+ 97Y_{203} + 69Y_{204} + 46Y_{205} \tag{70}$$

$$+ 48Y_{206} + 63Y_{207} + 63Y_{208} \tag{71}$$

$$+ 90Y_{209} + 28Y_{210} + 46Y_{211} \tag{72}$$

$$+ 73Y_{212} + 81Y_{213} + 68Y_{214} \tag{73}$$

$$+ 93Y_{215} + 74Y_{216} + 74Y_{217} \tag{74}$$

$$+ 13Y_{218} + 30Y_{219} + 50Y_{220} \tag{75}$$

$$+ 64Y_{221} + 62Y_{222} + 63Y_{223} \tag{76}$$

$$+ 64Y_{224} + 17Y_{225} + 19Y_{226} \tag{77}$$

$$+ 10Y_{227} + 87Y_{228} + 73Y_{229} \tag{78}$$

$$+ 79Y_{230} + 96Y_{231} + 60Y_{232} \tag{79}$$

$$+ 21Y_{233} + 91Y_{234} + 95Y_{235} \tag{80}$$

$$+ 99Y_{236} + 22Y_{237} + 17Y_{238} \tag{81}$$

$$+ 48Y_{239} + 42Y_{240} + 77Y_{241} \tag{82}$$

$$+ 74Y_{242} + 63Y_{243} + 57Y_{244} \tag{83}$$

$$+ 99Y_{245} + 32Y_{246} + 51Y_{247} \tag{84}$$

$$+ 31Y_{248} + 95Y_{249} + 75Y_{250} \tag{85}$$

$$+ 41Y_{251} + 21Y_{252} + 79Y_{253} \tag{86}$$

$$+ 77Y_{254} + 85Y_{255} + 40Y_{256} \tag{87}$$

$$+ 57Y_{257} + 63Y_{258} + 51Y_{259} \tag{88}$$

$$+ 64Y_{260} + 17Y_{261} + 19Y_{262} \tag{89}$$

$$+ 93Y_{263} + 14Y_{264} + 56Y_{265} \tag{90}$$

$$+ 77Y_{266} + 81Y_{267} + 20Y_{268} \tag{91}$$

$$+ 68Y_{269} + 21Y_{270} + 10Y_{271} \tag{92}$$

$$+ 90Y_{272} + 94Y_{273} + 41Y_{274} \tag{93}$$

$$+ 89Y_{275} + 71Y_{276} + 12Y_{277} \tag{94}$$

$$+ 81Y_{278} + 96Y_{279} + 51Y_{280} \tag{95}$$

$$+ 21Y_{281} + 32Y_{282} + 22Y_{283} \tag{96}$$

$$+ 16Y_{284} + 77Y_{285} + 62Y_{286} \tag{97}$$

$$+ 57Y_{288} + 1X_0 + 2X_1 \tag{98}$$

$$+ 1X_2 + 1X_3 + 10X_4 \tag{99}$$

$$+ 3X_5 + 3X_6 + 3X_7 \tag{100}$$

$$+ 2X_8 + 3X_9 + 5X_{10} \tag{101}$$

$$+ 8X_{11} + 3X_{12} + 4X_{13} \tag{102}$$

$$+ 2X_{14} + 4X_{15} + 8X_{16} \tag{103}$$

$$+ 7X_{17} + 1X_{18} + 3X_{19} \tag{104}$$

$$+ 3X_{20} + 10X_{21} + 1X_{22} \tag{105}$$

$$+ 4X_{23} + 2X_{24} + 2X_{25} \tag{106}$$

$$+ 6X_{26} + 6X_{27} + 5X_{28} \tag{107}$$

$$+ 3X_{29} + 8X_{30} + 8X_{31} \tag{108}$$

$$+ 3X_{32} + 2X_{33} + 10X_{34} \tag{109}$$

$$+ 7X_{35} + 8X_{36} + 8X_{37} \tag{110}$$

$$+ 8X_{38} + 7X_{39} + 5X_{40} \tag{111}$$

$$+ 5X_{41} + 6X_{42} + 9X_{43} \tag{112}$$

$$+ 2X_{44} + 3X_{45} + 8X_{46} \tag{113}$$

$$+ 6X_{47} + 7X_{48} + 4X_{49} \tag{114}$$

$$+ 6X_{50} + 10X_{51} + 10X_{52} \tag{115}$$

$$+ 1X_{53} + 9X_{54} + 1X_{55} \tag{116}$$

$$+ 2X_{56} + 5X_{57} + 6X_{58} \tag{117}$$

$$+ 9X_{59} + 5X_{60} + 6X_{61} \tag{118}$$

$$+ 3X_{62} + 8X_{63} + 8X_{64} \tag{119}$$

$$+ 9X_{65} + 2X_{66} + 4X_{67} \tag{120}$$

$$+ 7X_{68} + 7X_{69} + 10X_{70} \tag{121}$$

$$+ 1X_{71} + 1X_{72} + 2X_{73} \tag{122}$$

$$+ 1X_{74} + 1X_{75} + 5X_{76} \tag{123}$$

$$+ 5X_{77} + 10X_{78} + 9X_{79} \tag{124}$$

$$+ 6X_{80} + 2X_{81} + 8X_{82} \tag{125}$$

$$+ 4X_{83} + 7X_{84} + 3X_{85} \tag{126}$$

$$+ 7X_{86} + 10X_{87} + 5X_{88} \tag{127}$$

$$+ 9X_{89} + 1X_{90} + 10X_{91} \tag{128}$$

$$+ 9X_{92} + 2X_{93} + 5X_{94} \tag{129}$$

$$+ 5X_{95} + 5X_{96} + 9X_{97} \tag{130}$$

$$+ 5X_{98} + 5X_{99} + 4X_{100} \tag{131}$$

$$+ 1X_{101} + 4X_{102} + 3X_{103} \tag{132}$$

$$+ 1X_{104} + 7X_{105} + 3X_{106} \tag{133}$$

$$+ 8X_{107} + 8X_{108} + 8X_{109} \tag{134}$$

$$+ 3X_{110} + 5X_{111} + 9X_{112} \tag{135}$$

$$+ 6X_{113} + 5X_{114} + 8X_{115} \tag{136}$$

$$+ 2X_{116} + 3X_{117} + 9X_{118} \tag{137}$$

$$+ 7X_{119} + 4X_{120} + 1X_{121} \tag{138}$$

$$+ 4X_{122} + 4X_{123} + 8X_{124} \tag{139}$$

$$+ 10X_{125} + 6X_{126} + 5X_{127} \tag{140}$$

$$+ 5X_{128} + 2X_{129} + 5X_{130} \tag{141}$$

$$+ 5X_{131} + 6X_{132} + 2X_{133} \tag{142}$$

$$+ 9X_{134} + 6X_{135} + 1X_{136} \tag{143}$$

$$+ 8X_{137} + 5X_{138} + 7X_{139} \tag{144}$$

$$+ 3X_{140} + 3X_{141} + 9X_{142} \tag{145}$$

$$+ 4X_{143} + 6X_{144} + 5X_{145} \tag{146}$$

$$+ 3X_{146} + 8X_{147} + 3X_{148} \tag{147}$$

$$+ 3X_{149} + 5X_{150} + 4X_{151} \tag{148}$$

$$+ 1X_{152} + 7X_{153} + 7X_{154} \tag{149}$$

$$+ 1X_{155} + 7X_{156} + 8X_{157} \tag{150}$$

$$+ 4X_{158} + 2X_{159} + 5X_{160} \tag{151}$$

$$+ 5X_{161} + 6X_{162} + 9X_{163} \tag{152}$$

$$+ 8X_{164} + 8X_{165} + 8X_{166} \tag{153}$$

$$+ 2X_{167} + 7X_{168} + 1X_{169} \tag{154}$$

$$+ 1X_{170} + 7X_{171} + 10X_{172} \tag{155}$$

$$+ 1X_{173} + 8X_{174} + 7X_{175} \tag{156}$$

$$+ 10X_{176} + 1X_{177} + 4X_{178} \tag{157}$$

$$+ 4X_{179} + 9X_{180} + 6X_{181} \tag{158}$$

$$+ 2X_{182} + 5X_{183} + 5X_{184} \tag{159}$$

$$+ 2X_{185} + 10X_{186} + 4X_{187} \tag{160}$$

$$+ 10X_{188} + 4X_{189} + 8X_{190} \tag{161}$$

$$+ 7X_{191} + 8X_{192} + 2X_{193} \tag{162}$$

$$+ 7X_{194} + 1X_{195} + 5X_{196} \tag{163}$$

$$+ 6X_{197} + 6X_{198} + 2X_{199} \tag{164}$$

$$+ 3X_{200} + 2X_{201} + 1X_{202} \tag{165}$$

$$+ 5X_{203} + 2X_{204} + 1X_{205} \tag{166}$$

$$+ 7X_{206} + 1X_{207} + 1X_{208} \tag{167}$$

$$+ 8X_{209} + 1X_{210} + 1X_{211} \tag{168}$$

$$+ 9X_{212} + 5X_{213} + 9X_{214} \tag{169}$$

$$+ 2X_{215} + 8X_{216} + 8X_{217} \tag{170}$$

$$+ 7X_{218} + 7X_{219} + 4X_{220} \tag{171}$$

$$+ 1X_{221} + 10X_{222} + 1X_{223} \tag{172}$$

$$+ 4X_{224} + 4X_{225} + 7X_{226} \tag{173}$$

$$+ 1X_{227} + 1X_{228} + 10X_{229} \tag{174}$$

$$+ 7X_{230} + 6X_{231} + 5X_{232} \tag{175}$$

$$+ 3X_{233} + 5X_{234} + 8X_{235} \tag{176}$$

$$+ 1X_{236} + 2X_{237} + 4X_{238} \tag{177}$$

$$+ 8X_{239} + 6X_{240} + 3X_{241} \tag{178}$$

$$+ 9X_{242} + 10X_{243} + 9X_{244} \tag{179}$$

$$+ 2X_{245} + 9X_{246} + 2X_{247} \tag{180}$$

$$+ 6X_{248} + 9X_{249} + 2X_{250} \tag{181}$$

$$+ 9X_{251} + 3X_{252} + 6X_{253} \tag{182}$$

$$+ 8X_{254} + 7X_{255} + 1X_{256} \tag{183}$$

$$+ 10X_{257} + 10X_{258} + 1X_{259} \tag{184}$$

$$+ 2X_{260} + 4X_{261} + 6X_{262} \tag{185}$$

$$+ 1X_{263} + 9X_{264} + 9X_{265} \tag{186}$$

$$+ 9X_{266} + 5X_{267} + 8X_{268} \tag{187}$$

$$+ 9X_{269} + 2X_{270} + 2X_{271} \tag{188}$$

$$+ 8X_{272} + 1X_{273} + 10X_{274} \tag{189}$$

$$+ 9X_{275} + 3X_{276} + 5X_{277} \tag{190}$$

$$+ 5X_{278} + 6X_{279} + 2X_{280} \tag{191}$$

$$+ 3X_{281} + 8X_{282} + 5X_{283} \tag{192}$$

$$+ 1X_{284} + 3X_{285} + 8X_{286} \tag{193}$$

$$+ 7X_{287} + 9X_{288}$$

3 约束条件

3.1 等式约束 (34 个)

$$X_{16} = +12 \quad \text{(C\_1)} \tag{194}$$

$$X_{31} + X_{32} + X_{33} = +6 \quad \text{(C\_2)} \tag{195}$$

$$X_{48} + X_{49} + X_{50} = +23 \quad \text{(C\_3)} \tag{196}$$

$$X_{65} + X_{66} + X_{67} = +25 \quad \text{(C\_4)} \tag{197}$$

$$X_{82} + X_{83} + X_{84} = +15 \quad \text{(C\_5)} \tag{198}$$

$$X_{99} + X_{100} + X_{101} = +32 \quad \text{(C\_6)} \tag{199}$$

$$X_{115} + X_{116} + X_{117} + X_{118} = +27 \quad \text{(C\_7)} \tag{200}$$

$$X_{132} + X_{133} + X_{134} + X_{135} = +19 \quad \text{(C\_8)} \tag{201}$$

$$X_{149} + X_{150} + X_{151} + X_{152} = +5 \quad \text{(C\_9)} \tag{202}$$

$$X_{166} + X_{167} + X_{168} + X_{169} = +4 \quad \text{(C\_10)} \tag{203}$$

$$X_{182} + X_{183} + X_{184} + X_{185} + X_{186} = +14 \quad \text{(C\_11)} \tag{204}$$

$$X_{199} + X_{200} + X_{201} + X_{202} + X_{203} = +10 \quad \text{(C\_12)} \tag{205}$$

$$X_{216} + X_{217} + X_{218} + X_{219} + X_{220} = +28 \quad \text{(C\_13)} \tag{206}$$

$$X_{233} + X_{234} + X_{235} + X_{236} + X_{237} = +9 \quad \text{(C\_14)} \tag{207}$$

$$X_{250} + X_{251} + X_{252} + X_{253} + X_{254} = +8 \quad \text{(C\_15)} \tag{208}$$

$$X_{267} + X_{268} + X_{269} + X_{270} + X_{271} = +28 \quad \text{(C\_16)} \tag{209}$$

$$X_{284} + X_{285} + X_{286} + X_{287} + X_{288} = +35 \quad \text{(C\_17)} \tag{210}$$

$$X_{221} + X_{238} + X_{255} + X_{272} = +17 \quad \text{(C\_18)} \tag{211}$$

$$X_{222} + X_{239} + X_{256} + X_{273} = +6 \quad \text{(C\_19)} \tag{212}$$

$$X_{223} + X_{240} + X_{257} + X_{274} = +3 \quad \text{(C\_20)} \tag{213}$$

$$X_{224} + X_{241} + X_{258} + X_{275} = +20 \quad \text{(C\_21)} \tag{214}$$

$$X_{225} + X_{242} + X_{259} + X_{276} = +26 \quad \text{(C\_22)} \tag{215}$$

$$X_{226} + X_{243} + X_{260} + X_{277} = +23 \quad \text{(C\_23)} \tag{216}$$

$$X_{227} + X_{244} + X_{261} + X_{278} = +36 \quad \text{(C\_24)} \quad (217)$$

$$X_{228} + X_{245} + X_{262} + X_{279} = +30 \quad \text{(C\_25)} \quad (218)$$

$$X_{229} + X_{246} + X_{263} + X_{280} = +3 \quad \text{(C\_26)} \quad (219)$$

$$X_{230} + X_{247} + X_{264} + X_{281} = +29 \quad \text{(C\_27)} \quad (220)$$

$$X_{231} + X_{248} + X_{265} + X_{282} = +8 \quad \text{(C\_28)} \quad (221)$$

$$X_{232} + X_{249} + X_{266} + X_{283} = +4 \quad \text{(C\_29)} \quad (222)$$

$$X_{233} + X_{250} + X_{267} + X_{284} = +15 \quad \text{(C\_30)} \quad (223)$$

$$X_{234} + X_{251} + X_{268} + X_{285} = +16 \quad \text{(C\_31)} \quad (224)$$

$$X_{235} + X_{252} + X_{269} + X_{286} = +12 \quad \text{(C\_32)} \quad (225)$$

$$X_{236} + X_{253} + X_{270} + X_{287} = +33 \quad \text{(C\_33)} \quad (226)$$

$$X_{237} + X_{254} + X_{271} + X_{288} = +19 \quad \text{(C\_34)} \quad (227)$$

(228)

3.2 不等式约束 (323 个)

$$X_0 - 12Y_0 \leq +0 \quad \text{(G0)} \quad (229)$$

$$X_1 - 6Y_1 \leq +0 \quad \text{(G1)} \quad (230)$$

$$X_2 - 3Y_2 \leq +0 \quad \text{(G2)} \quad (231)$$

$$X_3 - 12Y_3 \leq +0 \quad \text{(G3)} \quad (232)$$

$$X_4 - 12Y_4 \leq +0 \quad \text{(G4)} \quad (233)$$

$$X_5 - 12Y_5 \leq +0 \quad \text{(G5)} \quad (234)$$

$$X_6 - 12Y_6 \leq +0 \quad \text{(G6)} \quad (235)$$

$$X_7 - 12Y_7 \leq +0 \quad \text{(G7)} \quad (236)$$

$$X_8 - 3Y_8 \leq +0 \quad \text{(G8)} \quad (237)$$

$$X_9 - 12Y_9 \leq +0 \quad \text{(G9)} \quad (238)$$

$$X_{10} - 8Y_{10} \leq +0 \quad \text{(G10)} \quad (239)$$

$$X_{11} - 4Y_{11} \leq +0 \quad \text{(G11)} \quad (240)$$

$$X_{12} - 12Y_{12} \leq +0 \quad \text{(G12)} \quad (241)$$

$$X_{13} - 12Y_{13} \leq +0 \quad \text{(G13)} \quad (242)$$

$$X_{14} - 12Y_{14} \leq +0 \quad \text{(G14)} \quad (243)$$

$$X_{15} - 12Y_{15} \leq +0 \quad \text{(G15)} \quad (244)$$

$$X_{16} - 12Y_{16} \leq +0 \quad \text{(G16)} \quad (245)$$

$$X_{17} - 6Y_{17} \leq +0 \quad \text{(G17)} \quad (246)$$

$$X_{18} - 6Y_{18} \leq +0 \quad \text{(G18)} \quad (247)$$

$$X_{19} - 3Y_{19} \leq +0 \quad \text{(G19)} \quad (248)$$

$$X_{20} - 6Y_{20} \leq +0 \quad \text{(G20)} \quad (249)$$

$$X_{21} - 6Y_{21} \leq +0 \quad \text{(G21)} \quad (250)$$

$$X_{22} - 6Y_{22} \leq +0 \quad \text{(G22)} \quad (251)$$

$$X_{23} - 6Y_{23} \leq +0 \quad \text{(G23)} \quad (252)$$

$$X_{24} - 6Y_{24} \leq +0 \quad \text{(G24)} \quad (253)$$

$$X_{25} - 3Y_{25} \leq +0 \quad \text{(G25)} \quad (254)$$

$$X_{26} - 6Y_{26} \leq +0 \quad \text{(G26)} \quad (255)$$

$$X_{27} - 6Y_{27} \leq +0 \quad \text{(G27)} \quad (256)$$
$$X_{28} - 4Y_{28} \leq +0 \quad \text{(G28)} \quad (257)$$
$$X_{29} - 6Y_{29} \leq +0 \quad \text{(G29)} \quad (258)$$
$$X_{30} - 6Y_{30} \leq +0 \quad \text{(G30)} \quad (259)$$
$$X_{31} - 6Y_{31} \leq +0 \quad \text{(G31)} \quad (260)$$
$$X_{32} - 6Y_{32} \leq +0 \quad \text{(G32)} \quad (261)$$
$$X_{33} - 6Y_{33} \leq +0 \quad \text{(G33)} \quad (262)$$
$$X_{34} - 17Y_{34} \leq +0 \quad \text{(G34)} \quad (263)$$
$$X_{35} - 6Y_{35} \leq +0 \quad \text{(G35)} \quad (264)$$
$$X_{36} - 3Y_{36} \leq +0 \quad \text{(G36)} \quad (265)$$
$$X_{37} - 20Y_{37} \leq +0 \quad \text{(G37)} \quad (266)$$
$$X_{38} - 23Y_{38} \leq +0 \quad \text{(G38)} \quad (267)$$
$$X_{39} - 23Y_{39} \leq +0 \quad \text{(G39)} \quad (268)$$
$$X_{40} - 23Y_{40} \leq +0 \quad \text{(G40)} \quad (269)$$
$$X_{41} - 23Y_{41} \leq +0 \quad \text{(G41)} \quad (270)$$
$$X_{42} - 3Y_{42} \leq +0 \quad \text{(G42)} \quad (271)$$
$$X_{43} - 23Y_{43} \leq +0 \quad \text{(G43)} \quad (272)$$
$$X_{44} - 8Y_{44} \leq +0 \quad \text{(G44)} \quad (273)$$
$$X_{45} - 4Y_{45} \leq +0 \quad \text{(G45)} \quad (274)$$
$$X_{46} - 15Y_{46} \leq +0 \quad \text{(G46)} \quad (275)$$
$$X_{47} - 16Y_{47} \leq +0 \quad \text{(G47)} \quad (276)$$
$$X_{48} - 12Y_{48} \leq +0 \quad \text{(G48)} \quad (277)$$
$$X_{49} - 23Y_{49} \leq +0 \quad \text{(G49)} \quad (278)$$
$$X_{50} - 19Y_{50} \leq +0 \quad \text{(G50)} \quad (279)$$
$$X_{51} - 17Y_{51} \leq +0 \quad \text{(G51)} \quad (280)$$
$$X_{52} - 6Y_{52} \leq +0 \quad \text{(G52)} \quad (281)$$
$$X_{53} - 3Y_{53} \leq +0 \quad \text{(G53)} \quad (282)$$
$$X_{54} - 20Y_{54} \leq +0 \quad \text{(G54)} \quad (283)$$
$$X_{55} - 25Y_{55} \leq +0 \quad \text{(G55)} \quad (284)$$
$$X_{56} - 23Y_{56} \leq +0 \quad \text{(G56)} \quad (285)$$
$$X_{57} - 25Y_{57} \leq +0 \quad \text{(G57)} \quad (286)$$
$$X_{58} - 25Y_{58} \leq +0 \quad \text{(G58)} \quad (287)$$
$$X_{59} - 3Y_{59} \leq +0 \quad \text{(G59)} \quad (288)$$
$$X_{60} - 25Y_{60} \leq +0 \quad \text{(G60)} \quad (289)$$
$$X_{61} - 8Y_{61} \leq +0 \quad \text{(G61)} \quad (290)$$
$$X_{62} - 4Y_{62} \leq +0 \quad \text{(G62)} \quad (291)$$
$$X_{63} - 15Y_{63} \leq +0 \quad \text{(G63)} \quad (292)$$
$$X_{64} - 16Y_{64} \leq +0 \quad \text{(G64)} \quad (293)$$
$$X_{65} - 12Y_{65} \leq +0 \quad \text{(G65)} \quad (294)$$
$$X_{66} - 25Y_{66} \leq +0 \quad \text{(G66)} \quad (295)$$
$$X_{67} - 19Y_{67} \leq +0 \quad \text{(G67)} \quad (296)$$
$$X_{68} - 15Y_{68} \leq +0 \quad \text{(G68)} \quad (297)$$

$$X_{69} - 6Y_{69} \leq +0 \quad \text{(G69)} \quad (298)$$
$$X_{70} - 3Y_{70} \leq +0 \quad \text{(G70)} \quad (299)$$
$$X_{71} - 15Y_{71} \leq +0 \quad \text{(G71)} \quad (300)$$
$$X_{72} - 15Y_{72} \leq +0 \quad \text{(G72)} \quad (301)$$
$$X_{73} - 15Y_{73} \leq +0 \quad \text{(G73)} \quad (302)$$
$$X_{74} - 15Y_{74} \leq +0 \quad \text{(G74)} \quad (303)$$
$$X_{75} - 15Y_{75} \leq +0 \quad \text{(G75)} \quad (304)$$
$$X_{76} - 3Y_{76} \leq +0 \quad \text{(G76)} \quad (305)$$
$$X_{77} - 15Y_{77} \leq +0 \quad \text{(G77)} \quad (306)$$
$$X_{78} - 8Y_{78} \leq +0 \quad \text{(G78)} \quad (307)$$
$$X_{79} - 4Y_{79} \leq +0 \quad \text{(G79)} \quad (308)$$
$$X_{80} - 15Y_{80} \leq +0 \quad \text{(G80)} \quad (309)$$
$$X_{81} - 15Y_{81} \leq +0 \quad \text{(G81)} \quad (310)$$
$$X_{82} - 12Y_{82} \leq +0 \quad \text{(G82)} \quad (311)$$
$$X_{83} - 15Y_{83} \leq +0 \quad \text{(G83)} \quad (312)$$
$$X_{84} - 15Y_{84} \leq +0 \quad \text{(G84)} \quad (313)$$
$$X_{85} - 17Y_{85} \leq +0 \quad \text{(G85)} \quad (314)$$
$$X_{86} - 6Y_{86} \leq +0 \quad \text{(G86)} \quad (315)$$
$$X_{87} - 3Y_{87} \leq +0 \quad \text{(G87)} \quad (316)$$
$$X_{88} - 20Y_{88} \leq +0 \quad \text{(G88)} \quad (317)$$
$$X_{89} - 26Y_{89} \leq +0 \quad \text{(G89)} \quad (318)$$
$$X_{90} - 23Y_{90} \leq +0 \quad \text{(G90)} \quad (319)$$
$$X_{91} - 32Y_{91} \leq +0 \quad \text{(G91)} \quad (320)$$
$$X_{92} - 30Y_{92} \leq +0 \quad \text{(G92)} \quad (321)$$
$$X_{93} - 3Y_{93} \leq +0 \quad \text{(G93)} \quad (322)$$
$$X_{94} - 29Y_{94} \leq +0 \quad \text{(G94)} \quad (323)$$
$$X_{95} - 8Y_{95} \leq +0 \quad \text{(G95)} \quad (324)$$
$$X_{96} - 4Y_{96} \leq +0 \quad \text{(G96)} \quad (325)$$
$$X_{97} - 15Y_{97} \leq +0 \quad \text{(G97)} \quad (326)$$
$$X_{98} - 16Y_{98} \leq +0 \quad \text{(G98)} \quad (327)$$
$$X_{99} - 12Y_{99} \leq +0 \quad \text{(G99)} \quad (328)$$
$$X_{100} - 32Y_{100} \leq +0 \quad \text{(G100)} \quad (329)$$
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$$X_{102} - 17Y_{102} \leq +0 \quad \text{(G102)} \quad (331)$$
$$X_{103} - 6Y_{103} \leq +0 \quad \text{(G103)} \quad (332)$$
$$X_{104} - 3Y_{104} \leq +0 \quad \text{(G104)} \quad (333)$$
$$X_{105} - 20Y_{105} \leq +0 \quad \text{(G105)} \quad (334)$$
$$X_{106} - 26Y_{106} \leq +0 \quad \text{(G106)} \quad (335)$$
$$X_{107} - 23Y_{107} \leq +0 \quad \text{(G107)} \quad (336)$$
$$X_{108} - 27Y_{108} \leq +0 \quad \text{(G108)} \quad (337)$$
$$X_{109} - 27Y_{109} \leq +0 \quad \text{(G109)} \quad (338)$$
$$X_{110} - 3Y_{110} \leq +0 \quad \text{(G110)} \quad (339)$$

$$X_{111} - 27Y_{111} \leq +0 \quad \text{(G111)} \quad (340)$$
$$X_{112} - 8Y_{112} \leq +0 \quad \text{(G112)} \quad (341)$$
$$X_{113} - 4Y_{113} \leq +0 \quad \text{(G113)} \quad (342)$$
$$X_{114} - 15Y_{114} \leq +0 \quad \text{(G114)} \quad (343)$$
$$X_{115} - 16Y_{115} \leq +0 \quad \text{(G115)} \quad (344)$$
$$X_{116} - 12Y_{116} \leq +0 \quad \text{(G116)} \quad (345)$$
$$X_{117} - 27Y_{117} \leq +0 \quad \text{(G117)} \quad (346)$$
$$X_{118} - 19Y_{118} \leq +0 \quad \text{(G118)} \quad (347)$$
$$X_{119} - 17Y_{119} \leq +0 \quad \text{(G119)} \quad (348)$$
$$X_{120} - 6Y_{120} \leq +0 \quad \text{(G120)} \quad (349)$$
$$X_{121} - 3Y_{121} \leq +0 \quad \text{(G121)} \quad (350)$$
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$$X_{123} - 19Y_{123} \leq +0 \quad \text{(G123)} \quad (352)$$
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$$X_{125} - 19Y_{125} \leq +0 \quad \text{(G125)} \quad (354)$$
$$X_{126} - 19Y_{126} \leq +0 \quad \text{(G126)} \quad (355)$$
$$X_{127} - 3Y_{127} \leq +0 \quad \text{(G127)} \quad (356)$$
$$X_{128} - 19Y_{128} \leq +0 \quad \text{(G128)} \quad (357)$$
$$X_{129} - 8Y_{129} \leq +0 \quad \text{(G129)} \quad (358)$$
$$X_{130} - 4Y_{130} \leq +0 \quad \text{(G130)} \quad (359)$$
$$X_{131} - 15Y_{131} \leq +0 \quad \text{(G131)} \quad (360)$$
$$X_{132} - 16Y_{132} \leq +0 \quad \text{(G132)} \quad (361)$$
$$X_{133} - 12Y_{133} \leq +0 \quad \text{(G133)} \quad (362)$$
$$X_{134} - 19Y_{134} \leq +0 \quad \text{(G134)} \quad (363)$$
$$X_{135} - 19Y_{135} \leq +0 \quad \text{(G135)} \quad (364)$$
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$$X_{137} - 5Y_{137} \leq +0 \quad \text{(G137)} \quad (366)$$
$$X_{138} - 3Y_{138} \leq +0 \quad \text{(G138)} \quad (367)$$
$$X_{139} - 5Y_{139} \leq +0 \quad \text{(G139)} \quad (368)$$
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$$X_{141} - 5Y_{141} \leq +0 \quad \text{(G141)} \quad (370)$$
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$$X_{143} - 5Y_{143} \leq +0 \quad \text{(G143)} \quad (372)$$
$$X_{144} - 3Y_{144} \leq +0 \quad \text{(G144)} \quad (373)$$
$$X_{145} - 5Y_{145} \leq +0 \quad \text{(G145)} \quad (374)$$
$$X_{146} - 5Y_{146} \leq +0 \quad \text{(G146)} \quad (375)$$
$$X_{147} - 4Y_{147} \leq +0 \quad \text{(G147)} \quad (376)$$
$$X_{148} - 5Y_{148} \leq +0 \quad \text{(G148)} \quad (377)$$
$$X_{149} - 5Y_{149} \leq +0 \quad \text{(G149)} \quad (378)$$
$$X_{150} - 5Y_{150} \leq +0 \quad \text{(G150)} \quad (379)$$
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$$X_{152} - 5Y_{152} \leq +0 \quad \text{(G152)} \quad (381)$$

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$$X_{154} - 4Y_{154} \leq +0 \quad \text{(G154)} \quad (383)$$
$$X_{155} - 3Y_{155} \leq +0 \quad \text{(G155)} \quad (384)$$
$$X_{156} - 4Y_{156} \leq +0 \quad \text{(G156)} \quad (385)$$
$$X_{157} - 4Y_{157} \leq +0 \quad \text{(G157)} \quad (386)$$
$$X_{158} - 4Y_{158} \leq +0 \quad \text{(G158)} \quad (387)$$
$$X_{159} - 4Y_{159} \leq +0 \quad \text{(G159)} \quad (388)$$
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$$X_{161} - 3Y_{161} \leq +0 \quad \text{(G161)} \quad (390)$$
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$$X_{170} - 14Y_{170} \leq +0 \quad \text{(G170)} \quad (399)$$
$$X_{171} - 6Y_{171} \leq +0 \quad \text{(G171)} \quad (400)$$
$$X_{172} - 3Y_{172} \leq +0 \quad \text{(G172)} \quad (401)$$
$$X_{173} - 14Y_{173} \leq +0 \quad \text{(G173)} \quad (402)$$
$$X_{174} - 14Y_{174} \leq +0 \quad \text{(G174)} \quad (403)$$
$$X_{175} - 14Y_{175} \leq +0 \quad \text{(G175)} \quad (404)$$
$$X_{176} - 14Y_{176} \leq +0 \quad \text{(G176)} \quad (405)$$
$$X_{177} - 14Y_{177} \leq +0 \quad \text{(G177)} \quad (406)$$
$$X_{178} - 3Y_{178} \leq +0 \quad \text{(G178)} \quad (407)$$
$$X_{179} - 14Y_{179} \leq +0 \quad \text{(G179)} \quad (408)$$
$$X_{180} - 8Y_{180} \leq +0 \quad \text{(G180)} \quad (409)$$
$$X_{181} - 4Y_{181} \leq +0 \quad \text{(G181)} \quad (410)$$
$$X_{182} - 14Y_{182} \leq +0 \quad \text{(G182)} \quad (411)$$
$$X_{183} - 14Y_{183} \leq +0 \quad \text{(G183)} \quad (412)$$
$$X_{184} - 12Y_{184} \leq +0 \quad \text{(G184)} \quad (413)$$
$$X_{185} - 14Y_{185} \leq +0 \quad \text{(G185)} \quad (414)$$
$$X_{186} - 14Y_{186} \leq +0 \quad \text{(G186)} \quad (415)$$
$$X_{187} - 10Y_{187} \leq +0 \quad \text{(G187)} \quad (416)$$
$$X_{188} - 6Y_{188} \leq +0 \quad \text{(G188)} \quad (417)$$
$$X_{189} - 3Y_{189} \leq +0 \quad \text{(G189)} \quad (418)$$
$$X_{190} - 10Y_{190} \leq +0 \quad \text{(G190)} \quad (419)$$
$$X_{191} - 10Y_{191} \leq +0 \quad \text{(G191)} \quad (420)$$
$$X_{192} - 10Y_{192} \leq +0 \quad \text{(G192)} \quad (421)$$
$$X_{193} - 10Y_{193} \leq +0 \quad \text{(G193)} \quad (422)$$
$$X_{194} - 10Y_{194} \leq +0 \quad \text{(G194)} \quad (423)$$

$$X_{195} - 3Y_{195} \leq +0 \quad \text{(G195)} \quad (424)$$

$$X_{196} - 10Y_{196} \leq +0 \quad \text{(G196)} \quad (425)$$

$$X_{197} - 8Y_{197} \leq +0 \quad \text{(G197)} \quad (426)$$

$$X_{198} - 4Y_{198} \leq +0 \quad \text{(G198)} \quad (427)$$

$$X_{199} - 10Y_{199} \leq +0 \quad \text{(G199)} \quad (428)$$

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$$X_{201} - 10Y_{201} \leq +0 \quad \text{(G201)} \quad (430)$$

$$X_{202} - 10Y_{202} \leq +0 \quad \text{(G202)} \quad (431)$$

$$X_{203} - 10Y_{203} \leq +0 \quad \text{(G203)} \quad (432)$$

$$X_{204} - 17Y_{204} \leq +0 \quad \text{(G204)} \quad (433)$$

$$X_{205} - 6Y_{205} \leq +0 \quad \text{(G205)} \quad (434)$$

$$X_{206} - 3Y_{206} \leq +0 \quad \text{(G206)} \quad (435)$$

$$X_{207} - 20Y_{207} \leq +0 \quad \text{(G207)} \quad (436)$$

$$X_{208} - 26Y_{208} \leq +0 \quad \text{(G208)} \quad (437)$$

$$X_{209} - 23Y_{209} \leq +0 \quad \text{(G209)} \quad (438)$$

$$X_{210} - 28Y_{210} \leq +0 \quad \text{(G210)} \quad (439)$$

$$X_{211} - 28Y_{211} \leq +0 \quad \text{(G211)} \quad (440)$$

$$X_{212} - 3Y_{212} \leq +0 \quad \text{(G212)} \quad (441)$$

$$X_{213} - 28Y_{213} \leq +0 \quad \text{(G213)} \quad (442)$$

$$X_{214} - 8Y_{214} \leq +0 \quad \text{(G214)} \quad (443)$$

$$X_{215} - 4Y_{215} \leq +0 \quad \text{(G215)} \quad (444)$$

$$X_{216} - 15Y_{216} \leq +0 \quad \text{(G216)} \quad (445)$$

$$X_{217} - 16Y_{217} \leq +0 \quad \text{(G217)} \quad (446)$$

$$X_{218} - 12Y_{218} \leq +0 \quad \text{(G218)} \quad (447)$$

$$X_{219} - 28Y_{219} \leq +0 \quad \text{(G219)} \quad (448)$$

$$X_{220} - 19Y_{220} \leq +0 \quad \text{(G220)} \quad (449)$$

$$X_{221} - 9Y_{221} \leq +0 \quad \text{(G221)} \quad (450)$$

$$X_{222} - 6Y_{222} \leq +0 \quad \text{(G222)} \quad (451)$$

$$X_{223} - 3Y_{223} \leq +0 \quad \text{(G223)} \quad (452)$$

$$X_{224} - 9Y_{224} \leq +0 \quad \text{(G224)} \quad (453)$$

$$X_{225} - 9Y_{225} \leq +0 \quad \text{(G225)} \quad (454)$$

$$X_{226} - 9Y_{226} \leq +0 \quad \text{(G226)} \quad (455)$$

$$X_{227} - 9Y_{227} \leq +0 \quad \text{(G227)} \quad (456)$$

$$X_{228} - 9Y_{228} \leq +0 \quad \text{(G228)} \quad (457)$$

$$X_{229} - 3Y_{229} \leq +0 \quad \text{(G229)} \quad (458)$$

$$X_{230} - 9Y_{230} \leq +0 \quad \text{(G230)} \quad (459)$$

$$X_{231} - 8Y_{231} \leq +0 \quad \text{(G231)} \quad (460)$$

$$X_{232} - 4Y_{232} \leq +0 \quad \text{(G232)} \quad (461)$$

$$X_{233} - 9Y_{233} \leq +0 \quad \text{(G233)} \quad (462)$$

$$X_{234} - 9Y_{234} \leq +0 \quad \text{(G234)} \quad (463)$$

$$X_{235} - 9Y_{235} \leq +0 \quad \text{(G235)} \quad (464)$$

$$X_{236} - 9Y_{236} \leq +0 \quad \text{(G236)} \quad (465)$$

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$$X_{238} - 8Y_{238} \leq +0 \quad \text{(G238)} \quad (467)$$
$$X_{239} - 6Y_{239} \leq +0 \quad \text{(G239)} \quad (468)$$
$$X_{240} - 3Y_{240} \leq +0 \quad \text{(G240)} \quad (469)$$
$$X_{241} - 8Y_{241} \leq +0 \quad \text{(G241)} \quad (470)$$
$$X_{242} - 8Y_{242} \leq +0 \quad \text{(G242)} \quad (471)$$
$$X_{243} - 8Y_{243} \leq +0 \quad \text{(G243)} \quad (472)$$
$$X_{244} - 8Y_{244} \leq +0 \quad \text{(G244)} \quad (473)$$
$$X_{245} - 8Y_{245} \leq +0 \quad \text{(G245)} \quad (474)$$
$$X_{246} - 3Y_{246} \leq +0 \quad \text{(G246)} \quad (475)$$
$$X_{247} - 8Y_{247} \leq +0 \quad \text{(G247)} \quad (476)$$
$$X_{248} - 8Y_{248} \leq +0 \quad \text{(G248)} \quad (477)$$
$$X_{249} - 4Y_{249} \leq +0 \quad \text{(G249)} \quad (478)$$
$$X_{250} - 8Y_{250} \leq +0 \quad \text{(G250)} \quad (479)$$
$$X_{251} - 8Y_{251} \leq +0 \quad \text{(G251)} \quad (480)$$
$$X_{252} - 8Y_{252} \leq +0 \quad \text{(G252)} \quad (481)$$
$$X_{253} - 8Y_{253} \leq +0 \quad \text{(G253)} \quad (482)$$
$$X_{254} - 8Y_{254} \leq +0 \quad \text{(G254)} \quad (483)$$
$$X_{255} - 17Y_{255} \leq +0 \quad \text{(G255)} \quad (484)$$
$$X_{256} - 6Y_{256} \leq +0 \quad \text{(G256)} \quad (485)$$
$$X_{257} - 3Y_{257} \leq +0 \quad \text{(G257)} \quad (486)$$
$$X_{258} - 20Y_{258} \leq +0 \quad \text{(G258)} \quad (487)$$
$$X_{259} - 26Y_{259} \leq +0 \quad \text{(G259)} \quad (488)$$
$$X_{260} - 23Y_{260} \leq +0 \quad \text{(G260)} \quad (489)$$
$$X_{261} - 28Y_{261} \leq +0 \quad \text{(G261)} \quad (490)$$
$$X_{262} - 28Y_{262} \leq +0 \quad \text{(G262)} \quad (491)$$
$$X_{263} - 3Y_{263} \leq +0 \quad \text{(G263)} \quad (492)$$
$$X_{264} - 28Y_{264} \leq +0 \quad \text{(G264)} \quad (493)$$
$$X_{265} - 8Y_{265} \leq +0 \quad \text{(G265)} \quad (494)$$
$$X_{266} - 4Y_{266} \leq +0 \quad \text{(G266)} \quad (495)$$
$$X_{267} - 15Y_{267} \leq +0 \quad \text{(G267)} \quad (496)$$
$$X_{268} - 16Y_{268} \leq +0 \quad \text{(G268)} \quad (497)$$
$$X_{269} - 12Y_{269} \leq +0 \quad \text{(G269)} \quad (498)$$
$$X_{270} - 28Y_{270} \leq +0 \quad \text{(G270)} \quad (499)$$
$$X_{271} - 19Y_{271} \leq +0 \quad \text{(G271)} \quad (500)$$
$$X_{272} - 17Y_{272} \leq +0 \quad \text{(G272)} \quad (501)$$
$$X_{273} - 6Y_{273} \leq +0 \quad \text{(G273)} \quad (502)$$
$$X_{274} - 3Y_{274} \leq +0 \quad \text{(G274)} \quad (503)$$
$$X_{275} - 20Y_{275} \leq +0 \quad \text{(G275)} \quad (504)$$
$$X_{276} - 26Y_{276} \leq +0 \quad \text{(G276)} \quad (505)$$
$$X_{277} - 23Y_{277} \leq +0 \quad \text{(G277)} \quad (506)$$
$$X_{278} - 35Y_{278} \leq +0 \quad \text{(G278)} \quad (507)$$

$$X_{279} - 30Y_{279} \leq +0 \quad \text{(G279)} \tag{508}$$
$$X_{280} - 3Y_{280} \leq +0 \quad \text{(G280)} \tag{509}$$
$$X_{281} - 29Y_{281} \leq +0 \quad \text{(G281)} \tag{510}$$
$$X_{282} - 8Y_{282} \leq +0 \quad \text{(G282)} \tag{511}$$
$$X_{283} - 4Y_{283} \leq +0 \quad \text{(G283)} \tag{512}$$
$$X_{284} - 15Y_{284} \leq +0 \quad \text{(G284)} \tag{513}$$
$$X_{285} - 16Y_{285} \leq +0 \quad \text{(G285)} \tag{514}$$
$$X_{286} - 12Y_{286} \leq +0 \quad \text{(G286)} \tag{515}$$
$$X_{287} - 33Y_{287} \leq +0 \quad \text{(G287)} \tag{516}$$
$$X_{288} - 19Y_{288} \leq +0 \quad \text{(G288)} \tag{517}$$
$$\tag{518}$$

4 变量定义

4.1 二元变量 (289 个)

$$Y_i \in \{0, 1\}, \quad i \in \{0, 1, 2, \ldots, 288\} \tag{519}$$

二元变量示例 (显示前 50 个，共 289 个):

Y_{287}, 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 239 个二元变量

4.2 连续变量 (289 个)

所有连续变量均为非负实数:

$$X_j \geq 0, \quad j \in \{0, 1, 2, \ldots, 288\} \tag{520}$$

连续变量说明: 模型包含 289 个连续决策变量，所有变量的取值范围均为非负实数域。