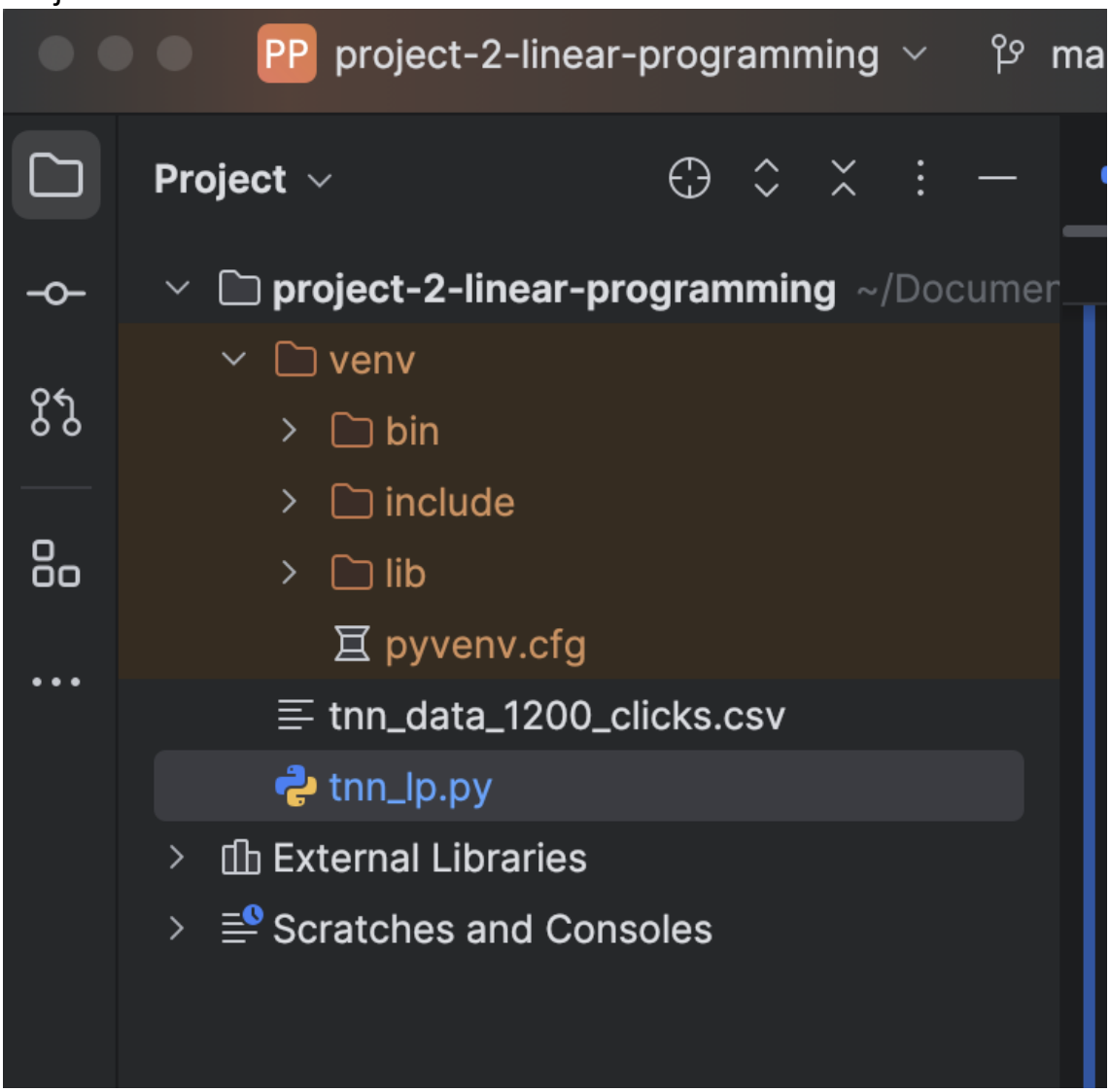
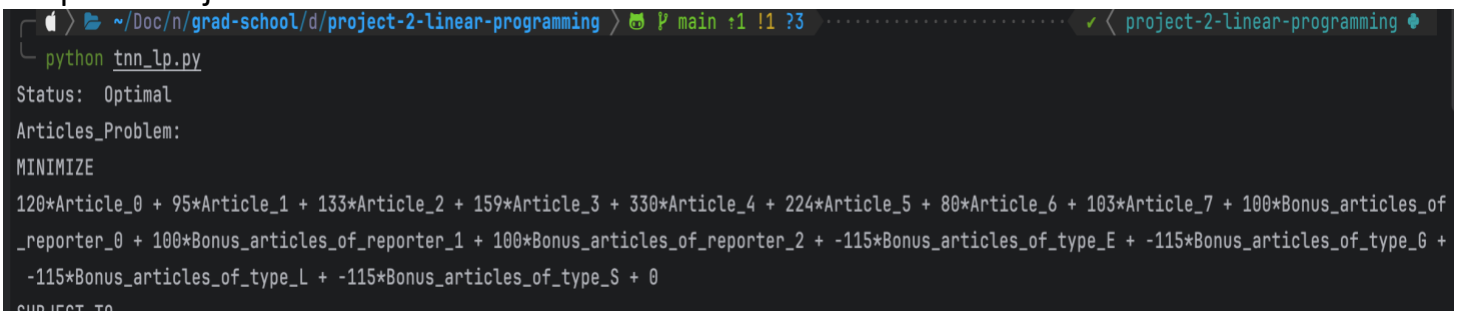
Project venv



Output of Objective function



Constraints

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SUBJECT TO
Include_at_least_1_article_suggested_by_reporter_0: Article_0 + Article_1 >= 1

Amount_of_bonus_articles_must_be_>_than_normal_articles_for_reporter_0:
 - Article_0 - Article_1 + Bonus_articles_of_reporter_0 >= -1

Bonus_articles_for_reporter_0_must_be_positive: Bonus_articles_of_reporter_0
 >= 0

Include_at_least_1_article_suggested_by_reporter_1: Article_2 + Article_3
 + Article_4 + Article_5 >= 1

Amount_of_bonus_articles_must_be_>_than_normal_articles_for_reporter_1:
 - Article_2 - Article_3 - Article_4 - Article_5
 + Bonus_articles_of_reporter_1 >= -1

Bonus_articles_for_reporter_1_must_be_positive: Bonus_articles_of_reporter_1
 >= 0

Include_at_least_1_article_suggested_by_reporter_2: Article_6 + Article_7 >= 1
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Amount_of_bonus_articles_must_be_>_than_normal_articles_for_reporter_2:
 - Article_6 - Article_7 + Bonus_articles_of_reporter_2 >= -1

Bonus_articles_for_reporter_2_must_be_positive: Bonus_articles_of_reporter_2
 >= 0

Minimum_clicks_constraint: 3200 Article_0 + 2500 Article_1 + 2800 Article_2
 + 1100 Article_3 + 2300 Article_4 + 4000 Article_5 + 900 Article_6
 + 3600 Article_7 >= 1200

At_least_1_article_of_type_L_constraint: Article_3 + Article_7 >= 1

Article_type_L_cannot_have_more_than_half_Article_0___Article_1___Article_2___Article_3___Article_4___Article_5___Article_6___Article_7:
 - 0.5 Article_0 - 0.5 Article_1 - 0.5 Article_2 + 0.5 Article_3
 - 0.5 Article_4 - 0.5 Article_5 - 0.5 Article_6 + 0.5 Article_7 <= 0

Two_or_more_articles_of_type_L: - 0.5 Article_3 - 0.5 Article_7
 + Bonus_articles_of_type_L <= 0

Article_of_type_L_can't_be_negative: Bonus_articles_of_type_L <= 1

At_least_1_article_of_type_E_constraint: Article_1 + Article_5 >= 1

Article_type_E_cannot_have_more_than_half_Article_0___Article_1___Article_2___Article_3___Article_4___Article_5___Article_6___Article_7:
 - 0.5 Article_0 + 0.5 Article_1 - 0.5 Article_2 - 0.5 Article_3
 - 0.5 Article_4 + 0.5 Article_5 - 0.5 Article_6 - 0.5 Article_7 <= 0

Two_or_more_articles_of_type_E: - 0.5 Article_1 - 0.5 Article_5
 + Bonus_articles_of_type_E <= 0

Article_of_type_E_can't_be_negative: Bonus_articles_of_type_E <= 1

At_least_1_article_of_type_S_constraint: Article_2 + Article_6 >= 1

Article_type_S_cannot_have_more_than_half_Article_0___Article_1___Article_2___Article_3___Article_4___Article_5___Article_6___Article_7:
 - 0.5 Article_0 - 0.5 Article_1 + 0.5 Article_2 - 0.5 Article_3
 - 0.5 Article_4 - 0.5 Article_5 + 0.5 Article_6 - 0.5 Article_7 <= 0

Two_or_more_articles_of_type_S: - 0.5 Article_2 - 0.5 Article_6
 + Bonus_articles_of_type_S <= 0

Article_of_type_S_can't_be_negative: Bonus_articles_of_type_S <= 1

At_least_1_article_of_type_G_constraint: Article_0 + Article_4 >= 1

Article_type_G_cannot_have_more_than_half_Article_0___Article_1___Article_2___Article_3___Article_4___Article_5___Article_6___Article_7:
 0.5 Article_0 - 0.5 Article_1 - 0.5 Article_2 - 0.5 Article_3 + 0.5 Article_4
```

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Article_type_G_cannot_have_more_than_half_Article_0___Article_1___Article_2___Article_3___Article_4___Article_5___Article_6___Article_7:
 0.5 Article_0 - 0.5 Article_1 - 0.5 Article_2 - 0.5 Article_3 + 0.5 Article_4
 - 0.5 Article_5 - 0.5 Article_6 - 0.5 Article_7 <= 0

Two_or_more_articles_of_type_G: - 0.5 Article_0 - 0.5 Article_4
 + Bonus_articles_of_type_G <= 0

Article_of_type_G_can't_be_negative: Bonus_articles_of_type_G <= 1
```

Variables

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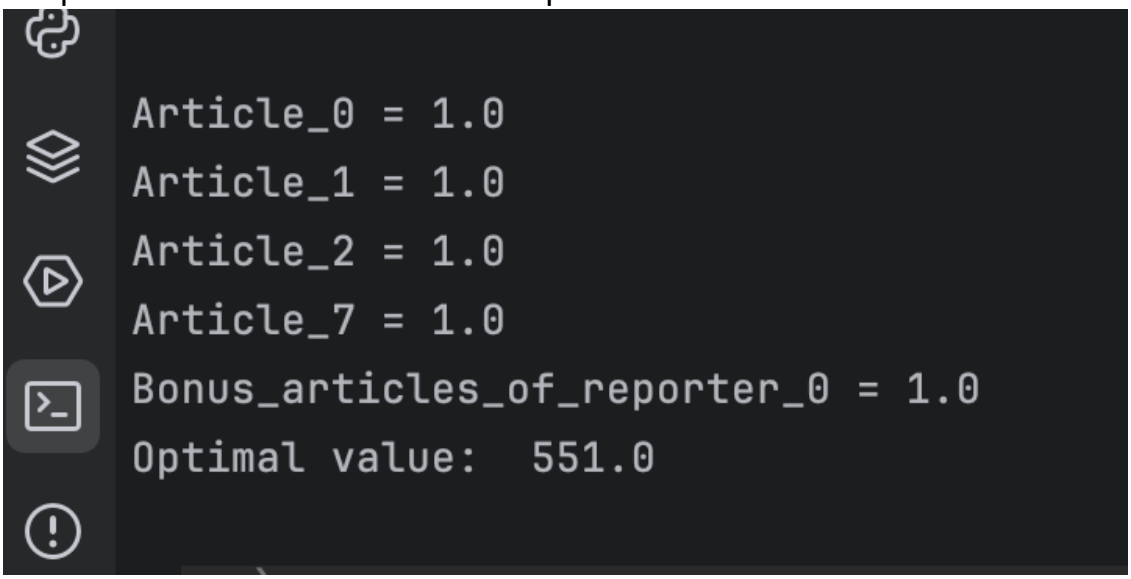
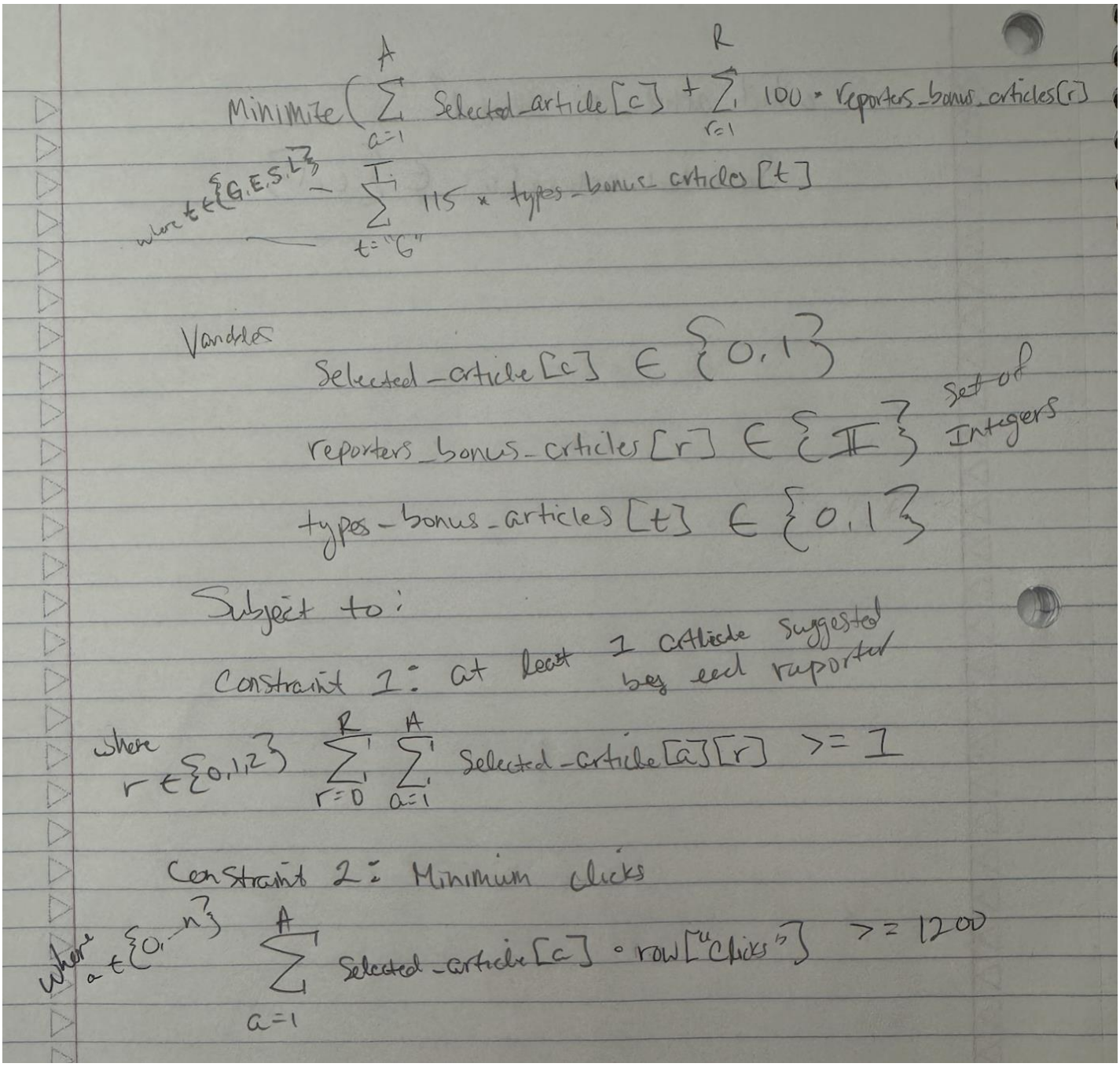
VARIABLES
0 <= Article_0 <= 1 Integer
0 <= Article_1 <= 1 Integer
0 <= Article_2 <= 1 Integer
0 <= Article_3 <= 1 Integer
0 <= Article_4 <= 1 Integer
0 <= Article_5 <= 1 Integer
0 <= Article_6 <= 1 Integer
0 <= Article_7 <= 1 Integer
0 <= Bonus_articles_of_reporter_0 Integer
0 <= Bonus_articles_of_reporter_1 Integer
0 <= Bonus_articles_of_reporter_2 Integer
0 <= Bonus_articles_of_type_E <= 1 Integer
0 <= Bonus_articles_of_type_G <= 1 Integer
0 <= Bonus_articles_of_type_L <= 1 Integer
0 <= Bonus_articles_of_type_S <= 1 Integer
```

Output with choice of articles and optimal value



Math Stuff


Minimize ($\sum_{a=1}^{A}$ Selected_article[a] + $\sum_{r=1}^{R}$ 100 * reporters_bonus_articles[r]
where $t \in \{G, E, S, L\}$ $\sum_{t="G"}^{I}$ 115 * types_bonus_articles[t]
Variables
Selected_article[a] $\in \{0, 1\}$
reporters_bonus_articles[r] $\in \{\mathbb{I}\}$ Set of Integers
types_bonus_articles[t] $\in \{0, 1\}$
Subject to:
Constraint 1: at least 1 article suggested by each reporter
where $r \in \{0, 1, 2\}$ $\sum_{r=0}^{R} \sum_{a=1}^{A}$ Selected_article[a][r] >= 1
Constraint 2: Minimum clicks
where $a \in \{0, \ldots n\}$ $\sum_{a=1}^{A}$ Selected_article[a] * row["clicks"] >= 1200

Constraint 3:

$$\text{where } t \in \{G, E, S, L\} \quad \sum_{t=\text{"G"}}^{T} \sum_{a=1}^{A} \text{Selected\_article}[a][t] >= 1$$

Constraint 4: NO article can have more than ½ total

$$C_{t,A} \quad \sum_{t=\text{"G"}}^{T} \left(\sum_{a=1}^{A} \text{Selected\_article}[a][t] \right) <= \frac{1}{2} \cdot \sum_{a=1}^{A} \text{Selected\_article}[a]$$

Constraint 5: If >1 article to reporter then +$100 to obj func.

$$r \in \{0, 1, 2\} \quad \sum_{r=0}^{R} \text{reporters\_bonus\_articles}[r] >= \sum_{r=0}^{R} \sum_{a=1}^{A} \text{Selected\_article}[a][r] - 1$$

$$\sum_{r=0}^{R} \text{reporters\_bonus\_articles}[r] >= 0$$

Constraint 6:

$$t \in \{G, E, S, L\} \quad \sum_{t=\text{"G"}}^{T} \text{types\_bonus\_articles}[t] <= \left(\sum_{t=\text{"G"}}^{T} \sum_{a=1}^{A} \text{Selected\_article}[a][t] \right) / 2$$

$$\sum_{t=\text{"G"}}^{T} \text{types\_bonus\_articles}[t] <= 1$$