Entraînement - Training

INSTRUCTION : *English version below*

En haut de chaque page se trouvent 3 nombres, par exemple +1/3/58+. Vous ***devez*** *vérifier que, sur chacune des pages de votre sujet, le* ***premier*** *de ces 3 nombres est le même (dans cet exemple, il s'agit donc du 1). Ce nombre identifie votre copie. Les deux autres nombres ne sont pas importants.*

Détacher la dernière feuille et répondre dessus. Ne pas rendre les pages contenant les questions, vous ne devez rendre ***que la dernière feuille****. Chaque question est sur 1 point, aucun point ne sera attribué aux questions contenant une mauvaise réponse.*

Les questions faisant apparaître le symbole ♣ peuvent présenter une ou plusieurs bonnes réponses qui doivent toutes être cochées. Les autres ont une unique bonne réponse.

At the top of each page are written 3 numbers, +1/3/58+. You ***must*** *check that, on each page you have, the* ***first*** *number is the same (in this case, it would be the number 1). This number is the id of your subject. The two other numbers are not important.*

Answer only on the last page. Keep the other pages containing the questions, you just have to return ***the last page****. Each right answer gives you 1 point. For any wrong answer, the mark of the question is 0.*

If there is a question with a symbol ♣, there may be one or more right answer. All of them must be checked. Any other question has only one right answer.

Question 1

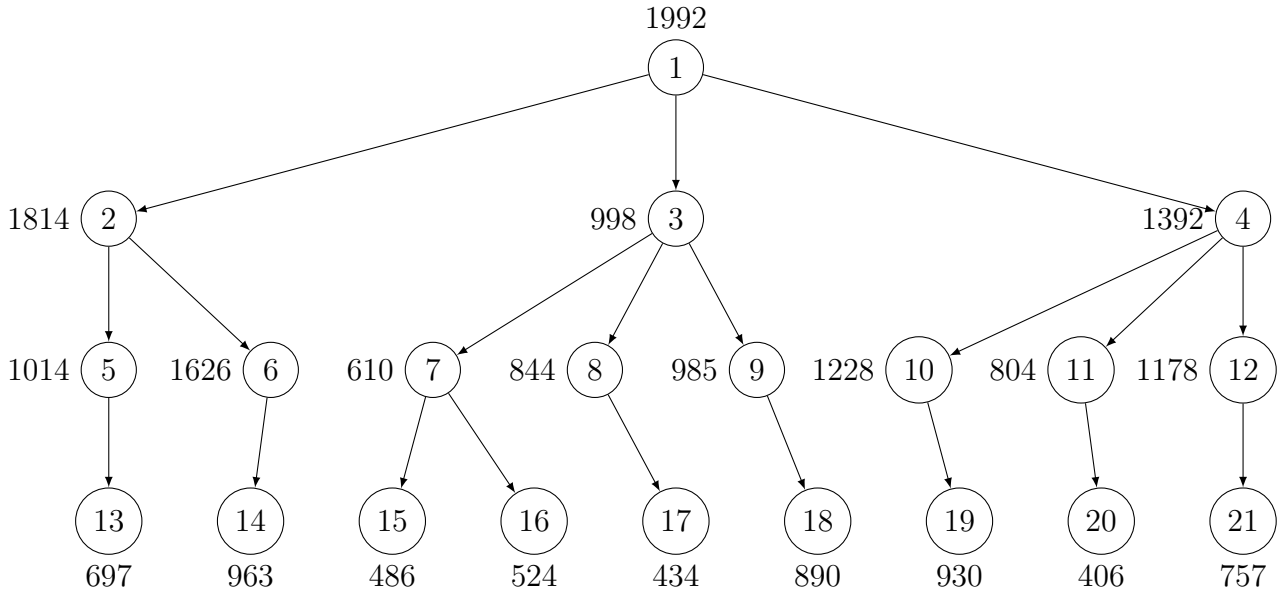
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the 8-th explored node by a depth-first-search exploration.

Remark

— The rood is the first explored node

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



1 1	4 4	7 7	10 10	13 13	16 16	19 19
2 2	5 5	8 8	11 11	14 14	17 17	20 20
3 3	6 6	■ 9	12 12	15 15	18 18	21 21

Question 2 ♣

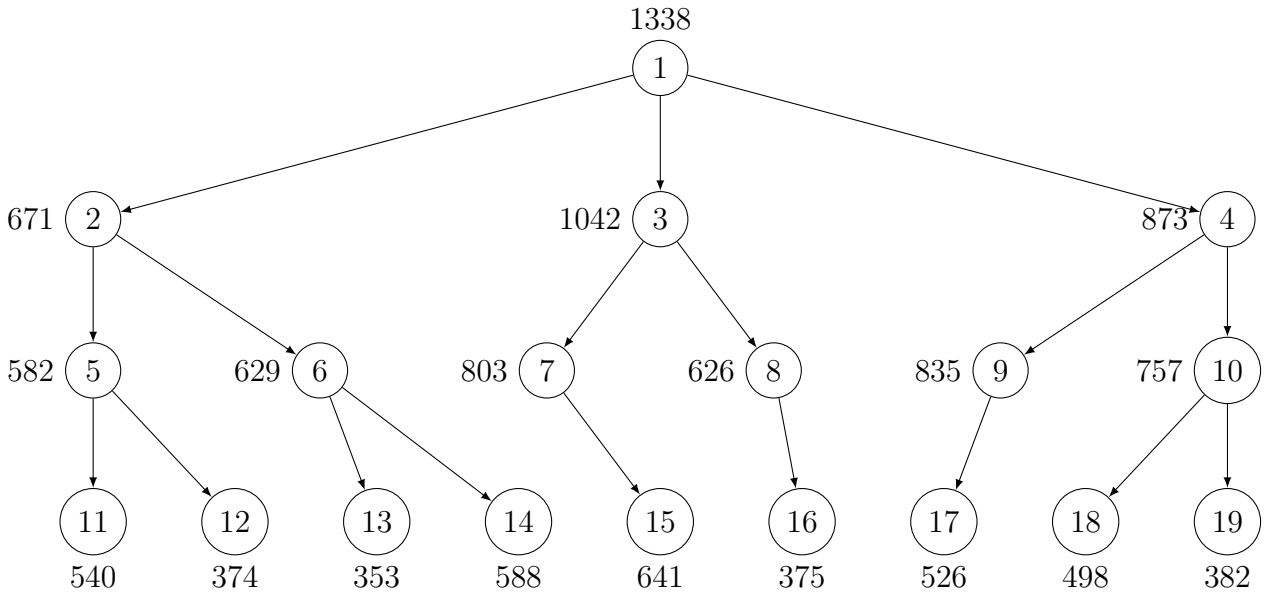
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the nodes that are cut by a depth-first-search exploration.

Remark

— All the solutions are feasible, a node is cut only if its bound is lower than the best current solution

— If a node is cut, the descendant of the nodes are not cut

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



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☐ 2	☐ 5	■ 8	☐ 11	☐ 14	■ 17	
☐ 3	☐ 6	☐ 9	■ 12	☐ 15	■ 18	

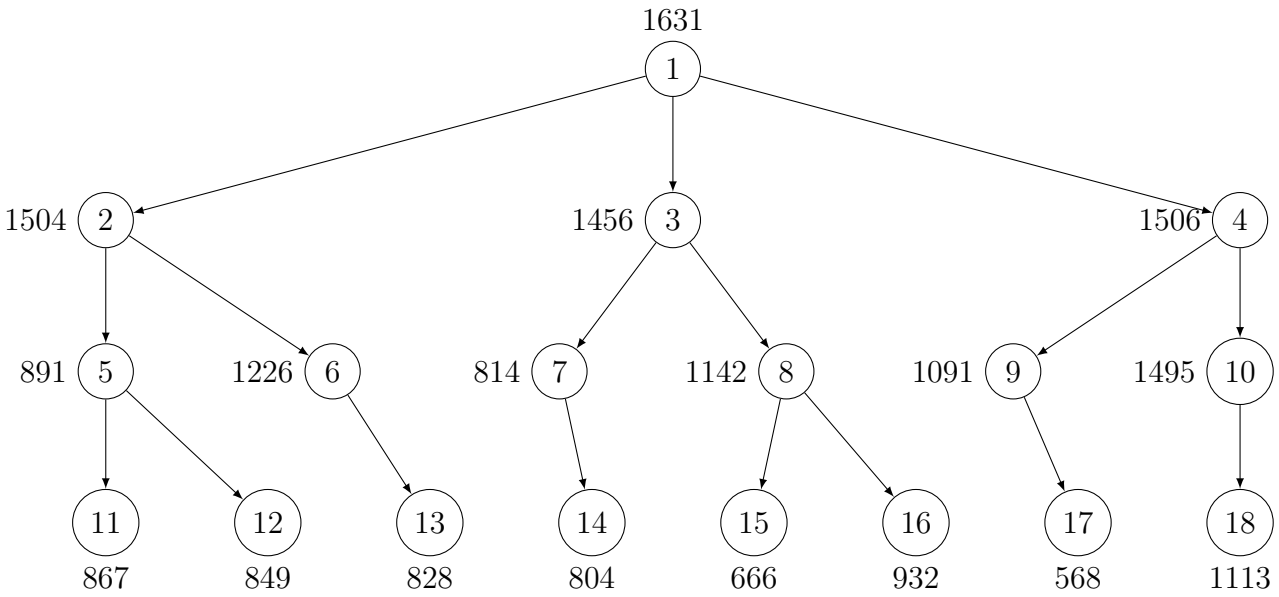
Question 3 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a depth-first-search exploration.

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



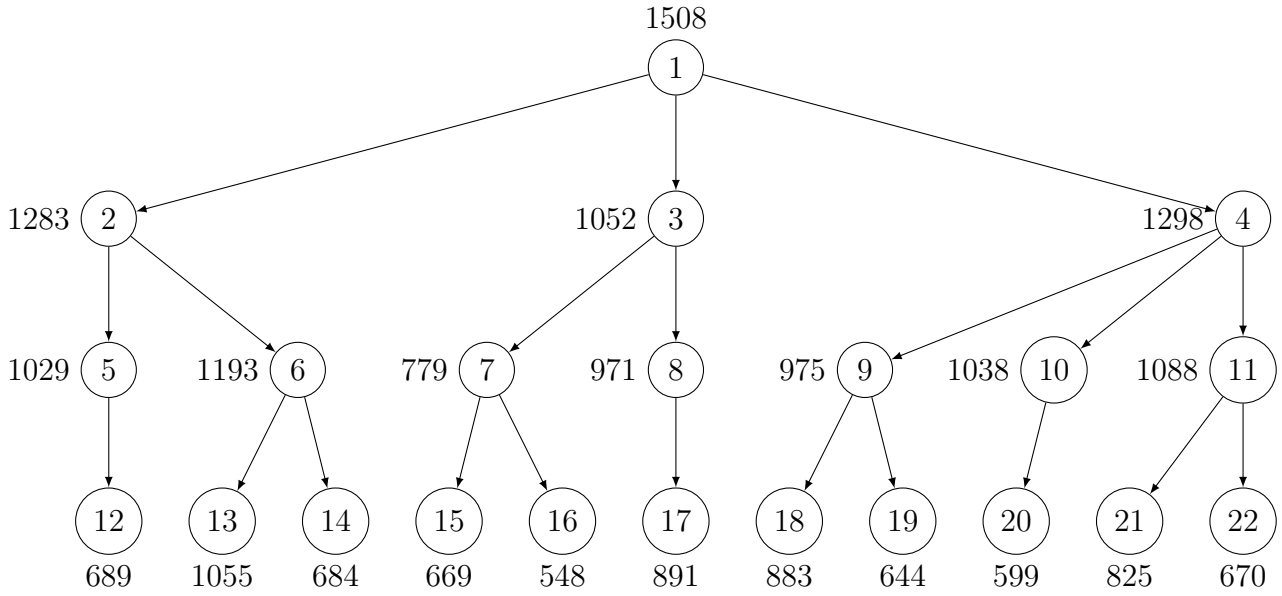
1	4	7 7	10	13 13	16
2	5	8	11	14 14	17 17
3	6	9	12 12	15 15	18

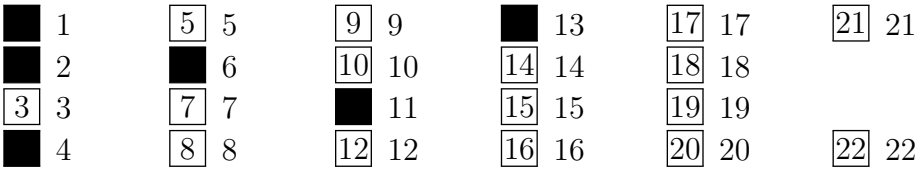
Question 4 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a best-first exploration, until a leaf is explored. (Check also that leaf).

Remark

- All the solutions are feasible
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.





Question 5

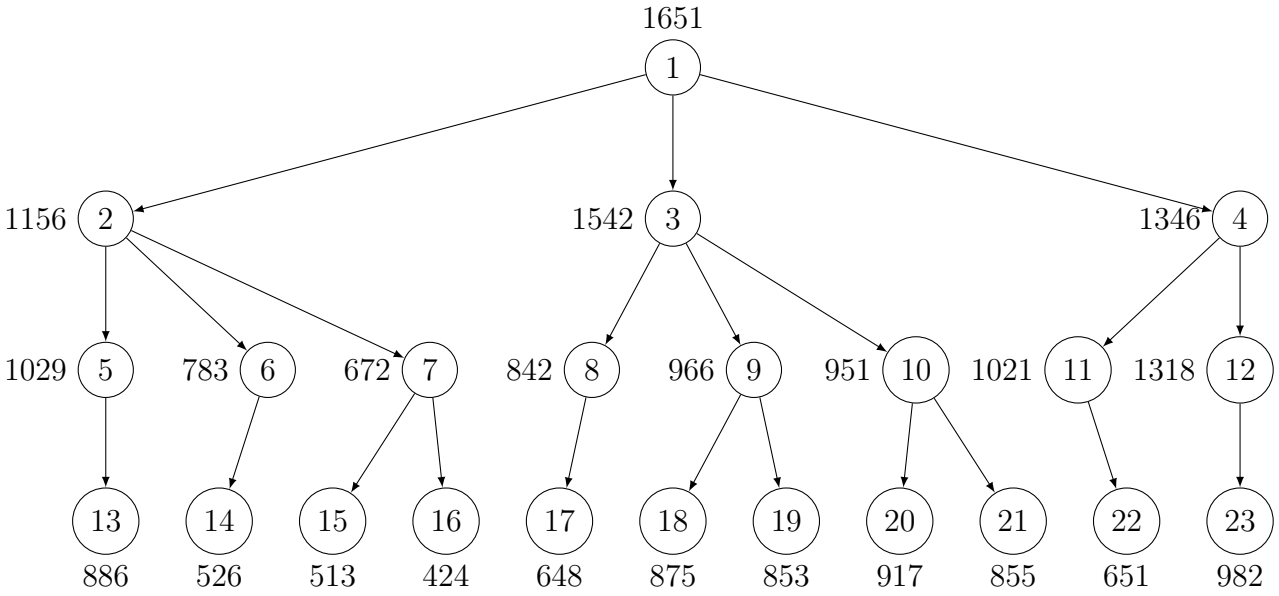
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the 7-th explored node by a depth-first-search exploration.

Remark

— The rood is the first explored node

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



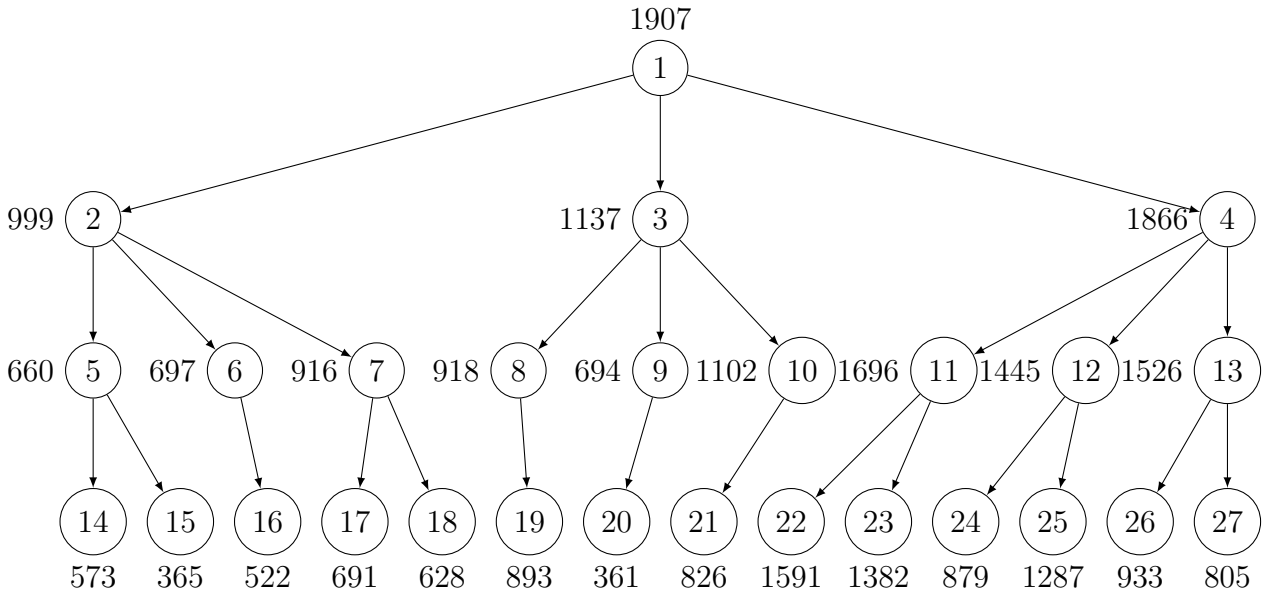
1 1	5 5	9 9	13 13	17 17	21 21
2 2	6 6	■ 10	14 14	18 18	22 22
3 3	7 7	11 11	15 15	19 19	
4 4	8 8	12 12	16 16	20 20	23 23

Question 6 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the nodes that are cut by a depth-first-search exploration.

Remark

- All the solutions are feasible, a node is cut only if its bound is lower than the best current solution
- If a node is cut, the descendant of the nodes are not cut
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



1 1	5 5	■ 9	■ 13	17 17	■ 21	25 25
2 2	6 6	10 10	14 14	■ 18	22 22	26 26
3 3	7 7	11 11	■ 15	19 19	■ 23	
4 4	8 8	■ 12	■ 16	20 20	24 24	27 27

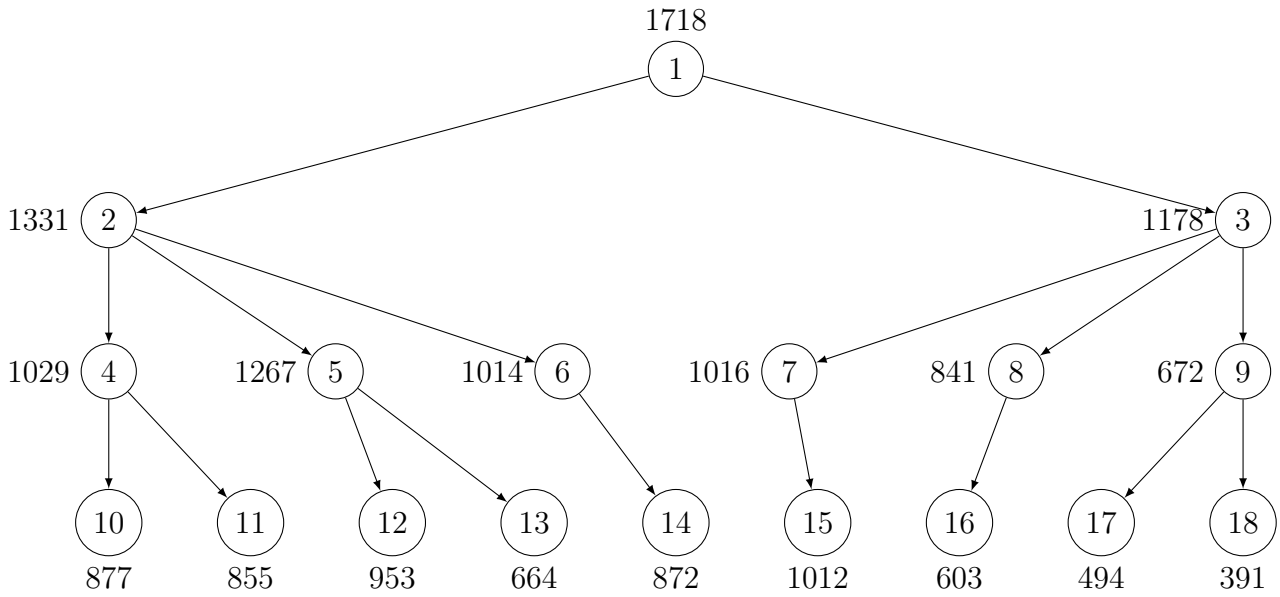
Question 7 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a depth-first-search exploration.

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

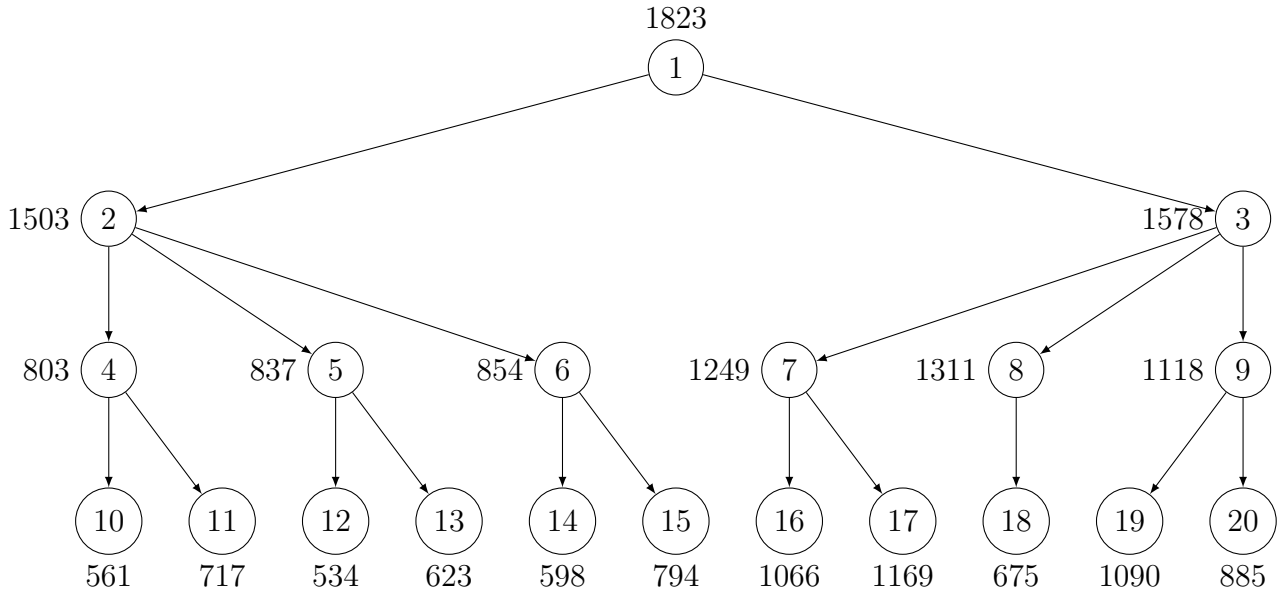
Question 8 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a best-first exploration, until a leaf is explored. (Check also that leaf).

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



■ 1 ■ 2 ■ 3 | □ 4 4 □ 5 5 □ 6 6 | ■ 7 ■ 8 □ 9 9 | □ 10 10 □ 11 11 □ 12 12 | □ 13 13 □ 14 14 □ 15 15 | □ 16 16 ■ 17 □ 18 18 | □ 19 19 □ 20 20

Question 9

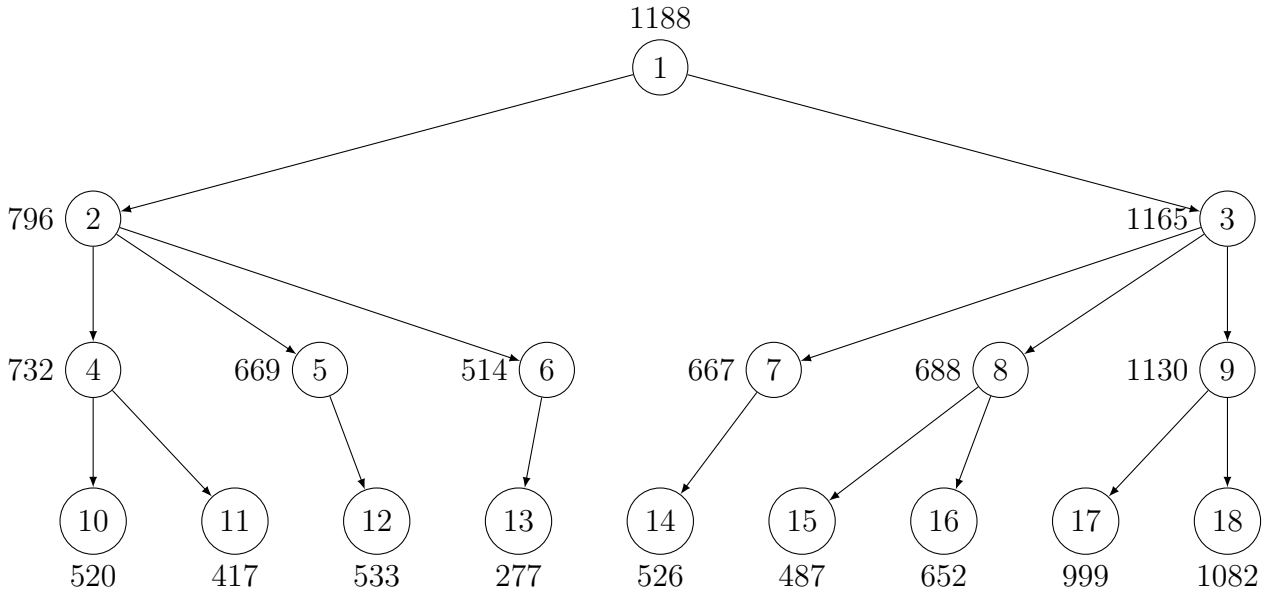
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the 11-th explored node by a depth-first-search exploration.

Remark

— The rood is the first explored node

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



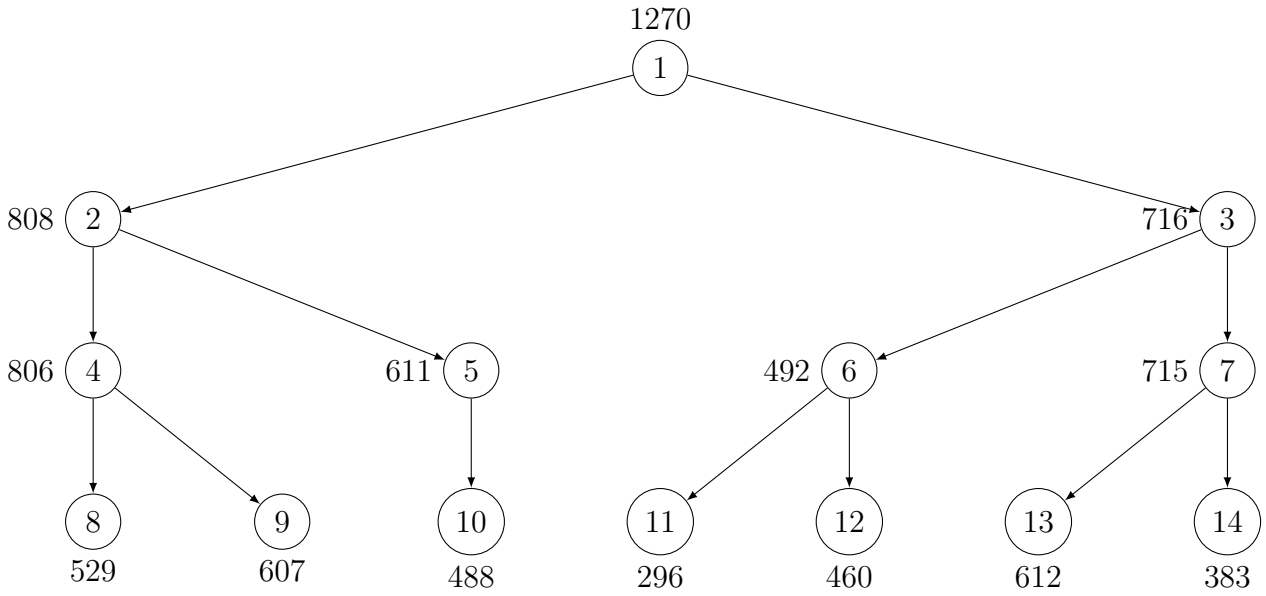
1 1	4 4	7 7	10 10	13 13	16 16
2 2	5 5	8 8	11 11	14 14	17 17
3 3	6 6	■ 9	12 12	15 15	18 18

Question 10 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the nodes that are cut by a depth-first-search exploration.

Remark

- All the solutions are feasible, a node is cut only if its bound is lower than the best current solution
- If a node is cut, the descendant of the nodes are not cut
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



☒ 1	☐ 3	☐ 5	☐ 7	☐ 9	☐ 11	☐ 13
☒ 2	☒ 4	■ 6	☒ 8	■ 10	☒ 12	■ 14

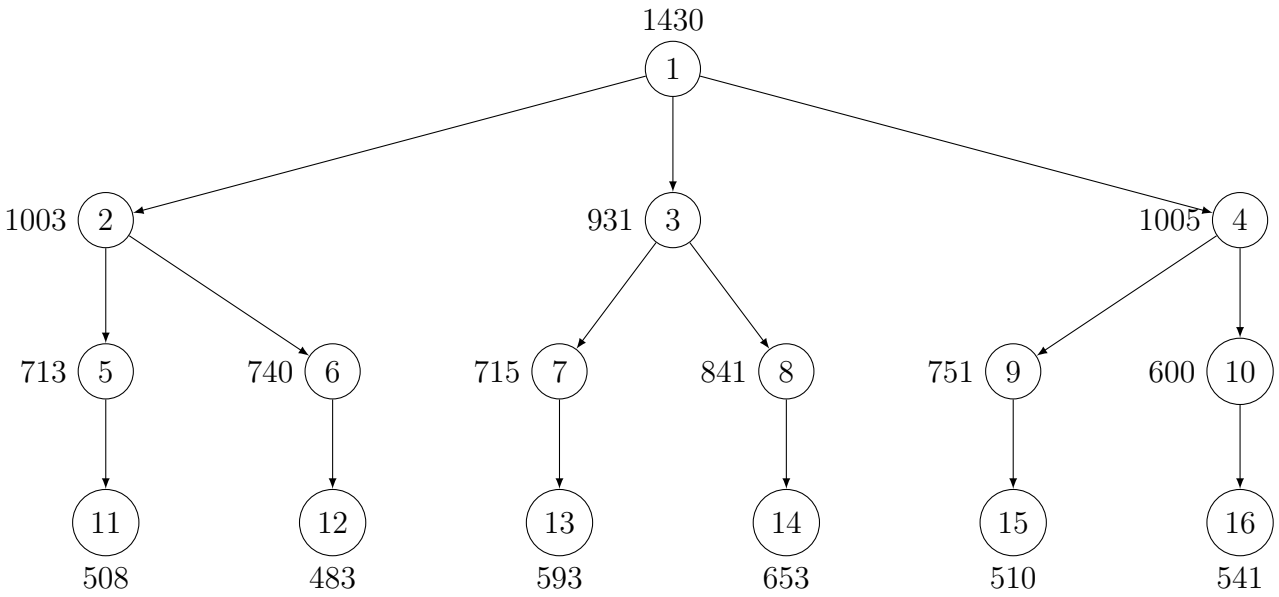
Question 11 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a depth-first-search exploration.

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

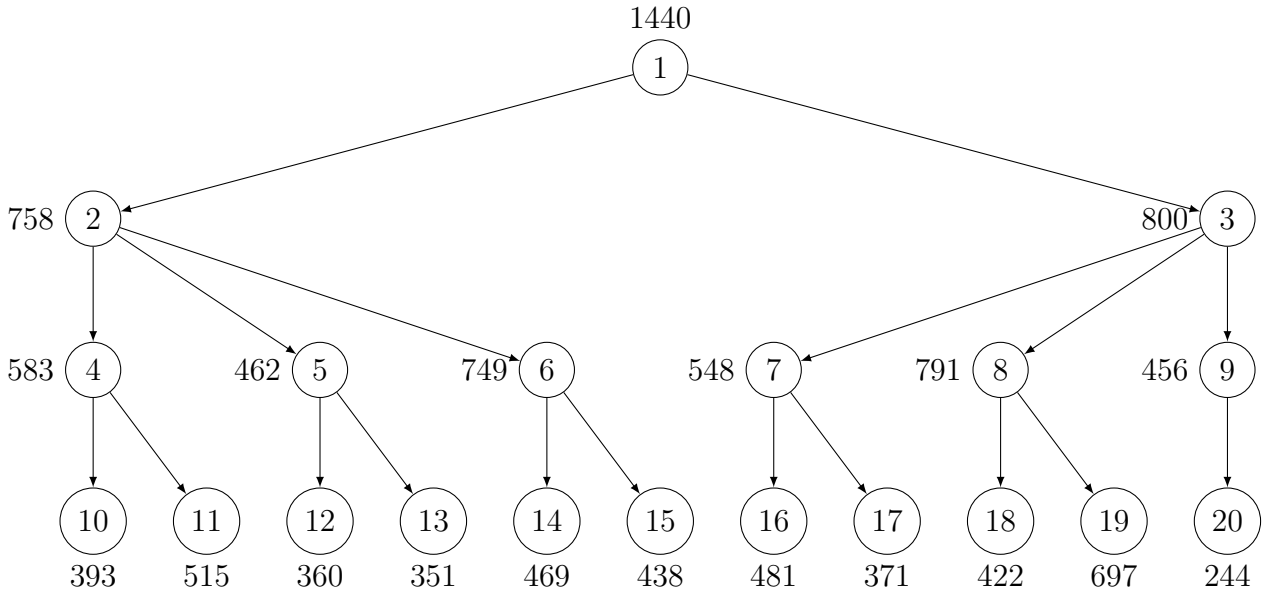
Question 12 ♣

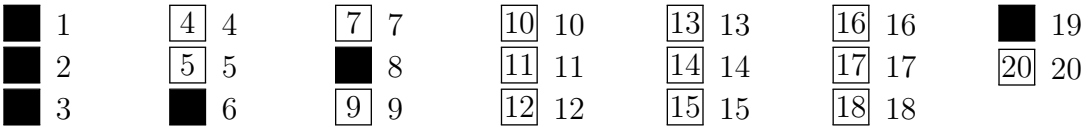
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a best-first exploration, until a leaf is explored. (Check also that leaf).

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.





Question 13

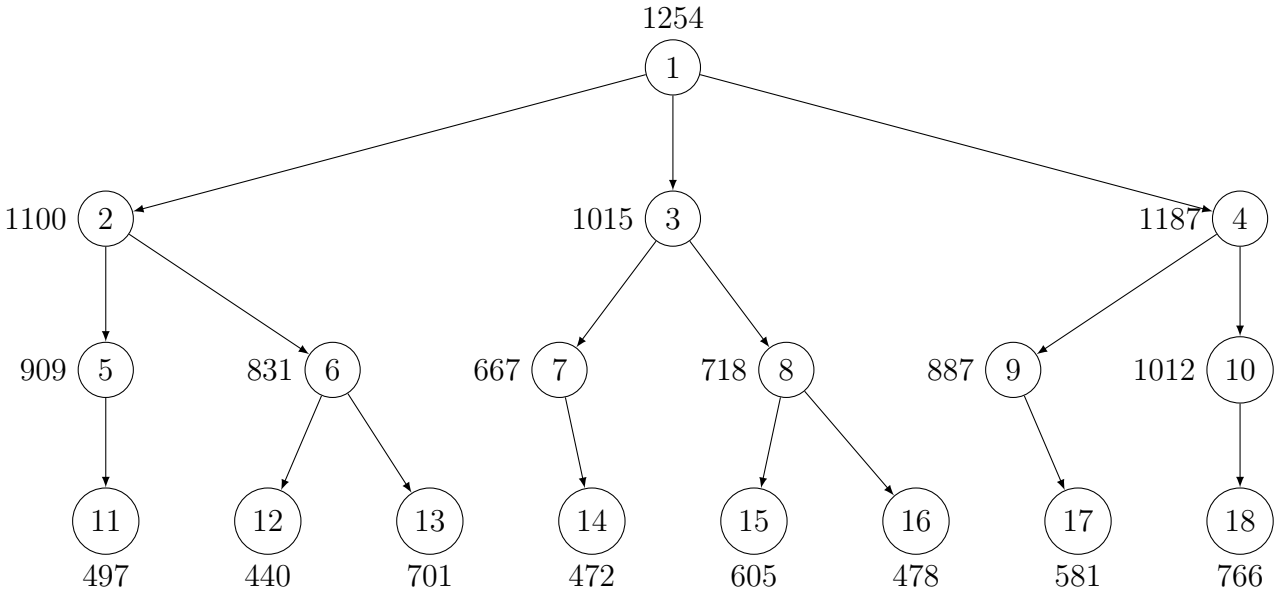
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the 11-th explored node by a depth-first-search exploration.

Remark

— The rood is the first explored node

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



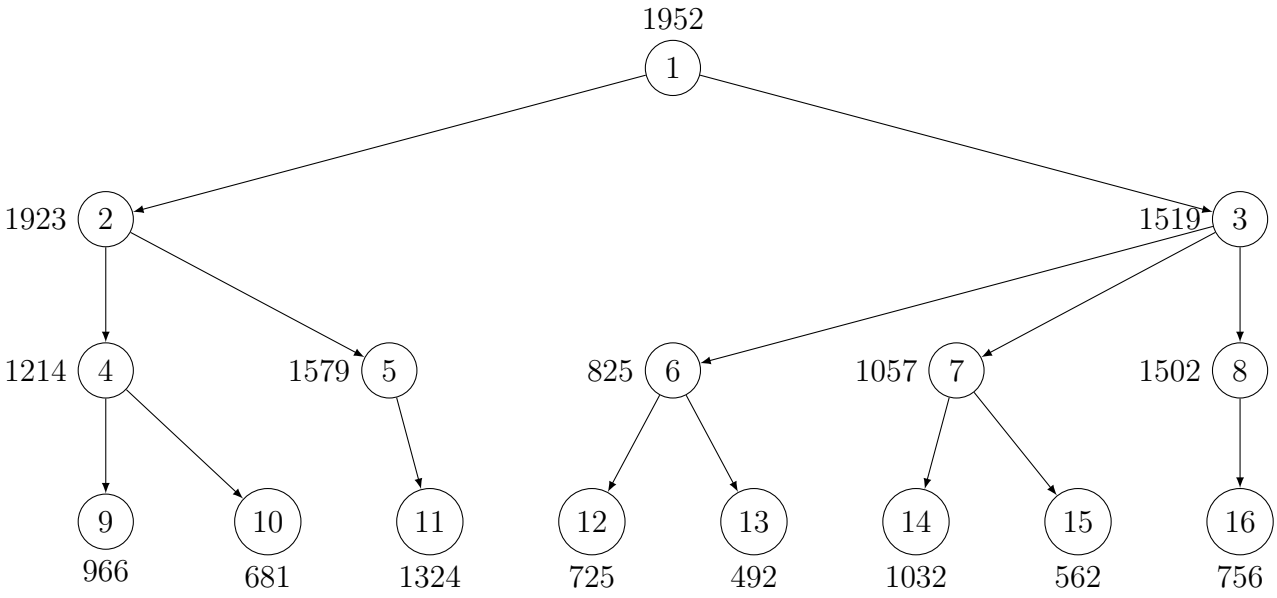
1 1	4 4	7 7	■ 10	13 13	16 16
2 2	5 5	8 8	11 11	14 14	17 17
3 3	6 6	9 9	12 12	15 15	18 18

Question 14 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the nodes that are cut by a depth-first-search exploration.

Remark

- All the solutions are feasible, a node is cut only if its bound is lower than the best current solution
- If a node is cut, the descendant of the nodes are not cut
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



1 1	4 4	■ 7	■ 10	13 13	■ 16
2 2	5 5	8 8	11 11	14 14	
3 3	■ 6	9 9	12 12	15 15	

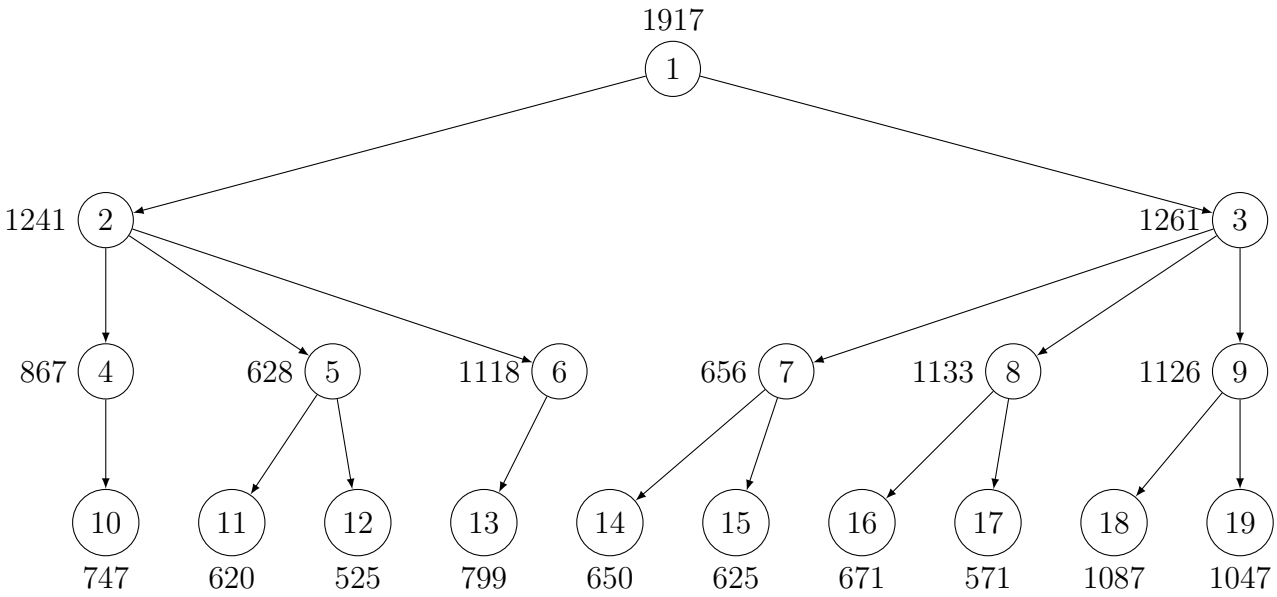
Question 15 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a depth-first-search exploration.

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



1	4	7	10	13	16	19
2	5	8	11	14	17	
3	6	9	12	15	18	

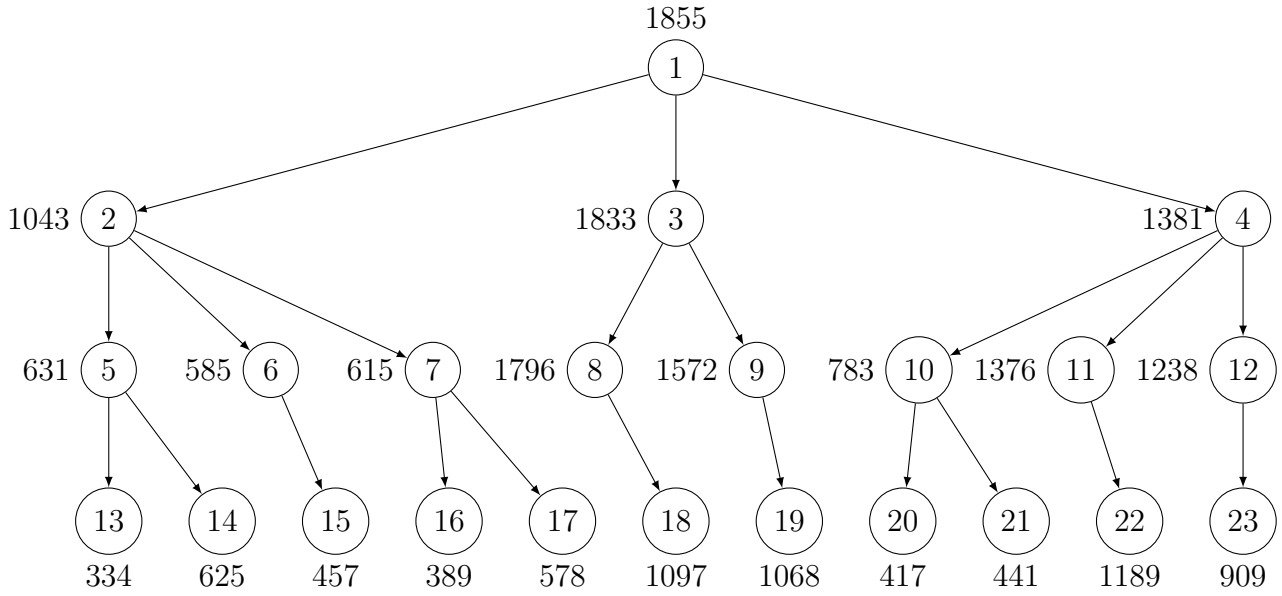
Question 16 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a best-first exploration, until a leaf is explored. (Check also that leaf).

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



■ 1	[5] 5	■ 9	[13] 13	[17] 17	[21] 21
[2] 2	[6] 6	[10] 10	[14] 14	[18] 18	■ 22
■ 3	[7] 7	■ 11	[15] 15	[19] 19	
■ 4	■ 8	■ 12	[16] 16	[20] 20	[23] 23

Question 17

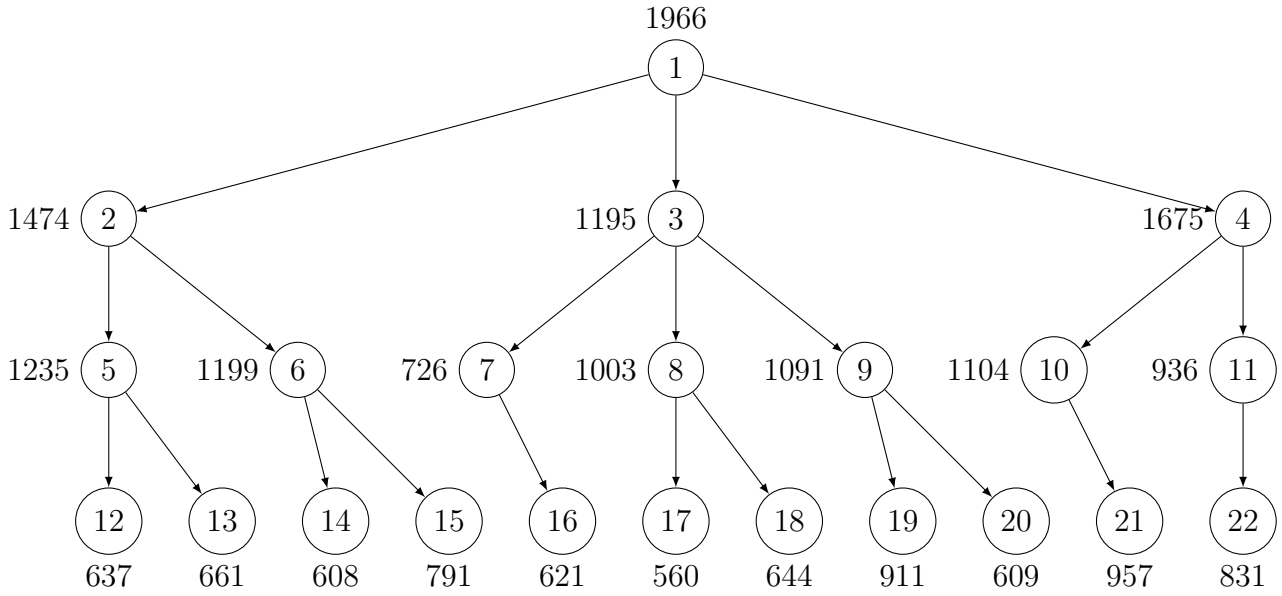
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the 9-th explored node by a depth-first-search exploration.

Remark

— The rood is the first explored node

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



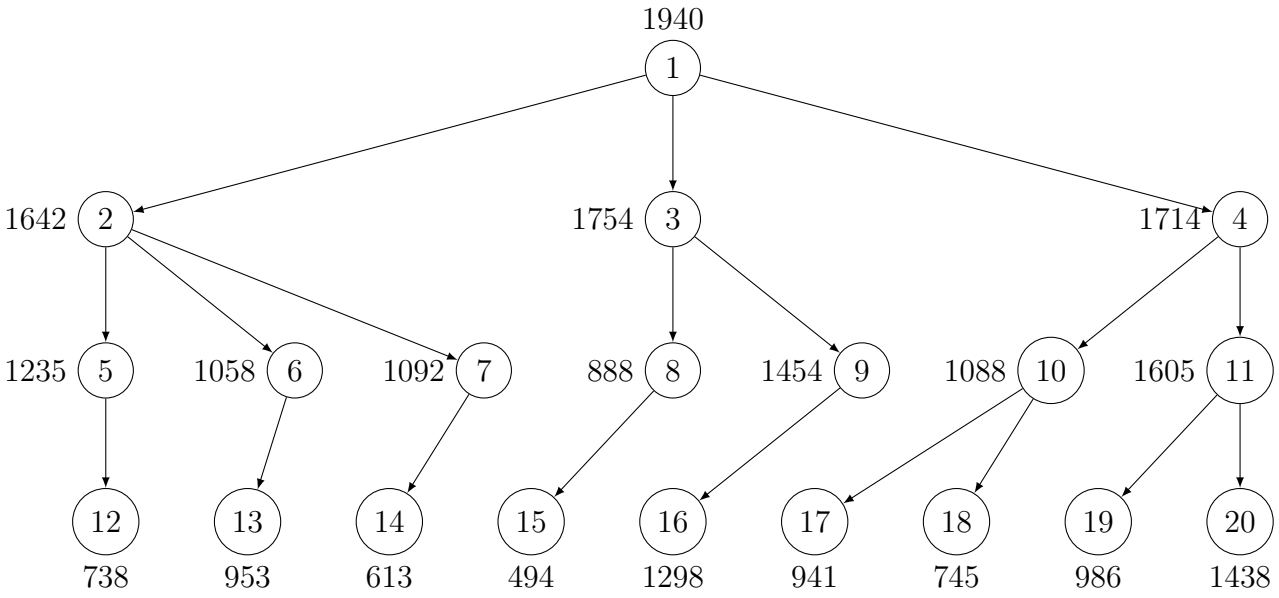
1 1	5 5	9 9	13 13	17 17	21 21
2 2	6 6	10 10	14 14	18 18	
3 3	7 7	11 11	15 15	19 19	
4 4	■ 8	12 12	16 16	20 20	22 22

Question 18 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the nodes that are cut by a depth-first-search exploration.

Remark

- All the solutions are feasible, a node is cut only if its bound is lower than the best current solution
- If a node is cut, the descendant of the nodes are not cut
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



[1] 1	[4] 4	[7] 7	■ 10	[13] 13	[16] 16	■ 19
[2] 2	[5] 5	■ 8	[11] 11	■ 14	[17] 17	[20] 20
[3] 3	[6] 6	[9] 9	[12] 12	[15] 15	[18] 18	

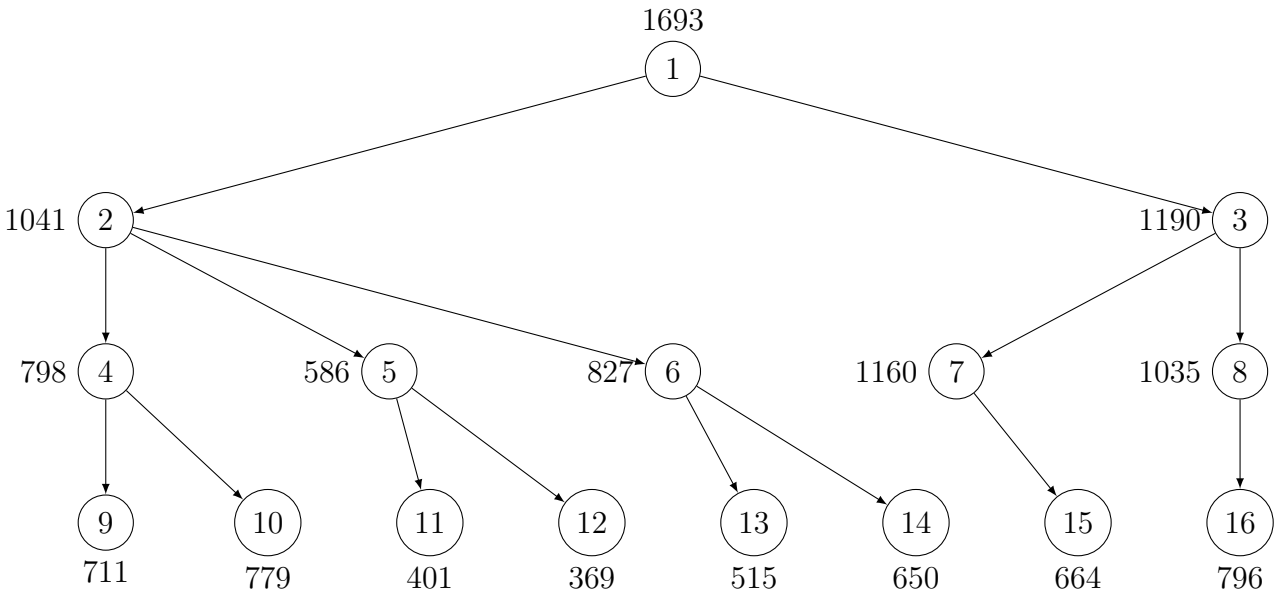
Question 19 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a depth-first-search exploration.

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

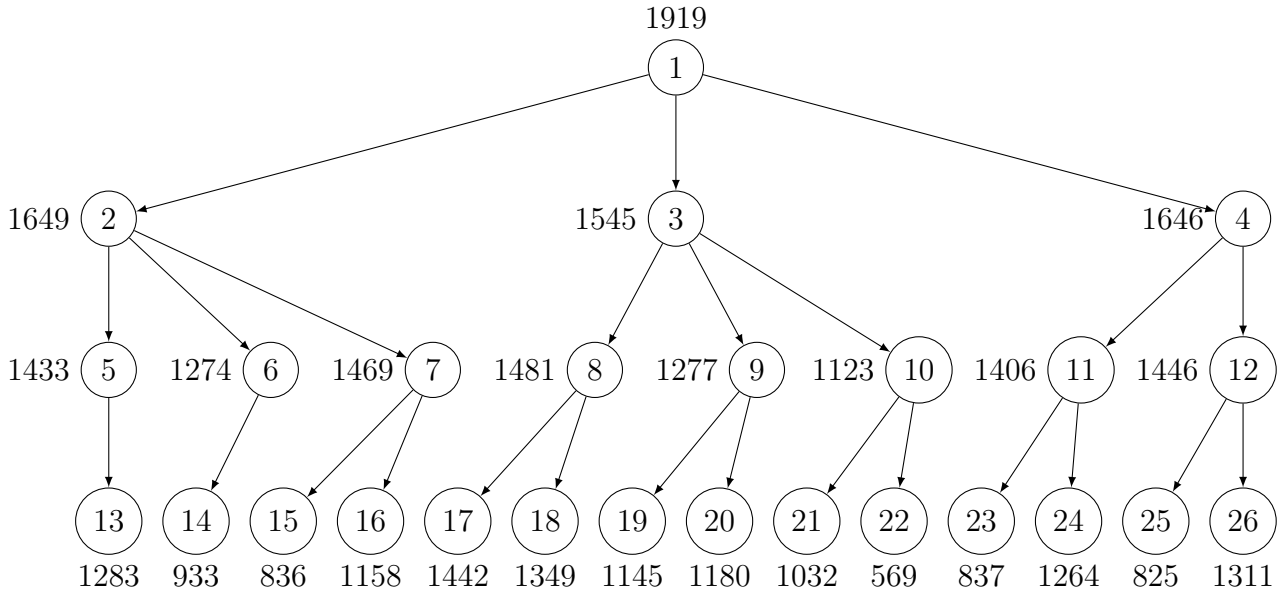
Question 20 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a best-first exploration, until a leaf is explored. (Check also that leaf).

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



■ 1 ■ 2 ■ 3 ■ 4 | 5 5 | 6 6 | ■ 7 | ■ 8 | 9 9 | 10 10 | 11 11 | ■ 12 | 13 13 | 14 14 | 15 15 | 16 16 | ■ 17 | 18 18 | 19 19 | 20 20 | 21 21 | 22 22 | 23 23 | 24 24 | 25 25 | 26 26

Question 21

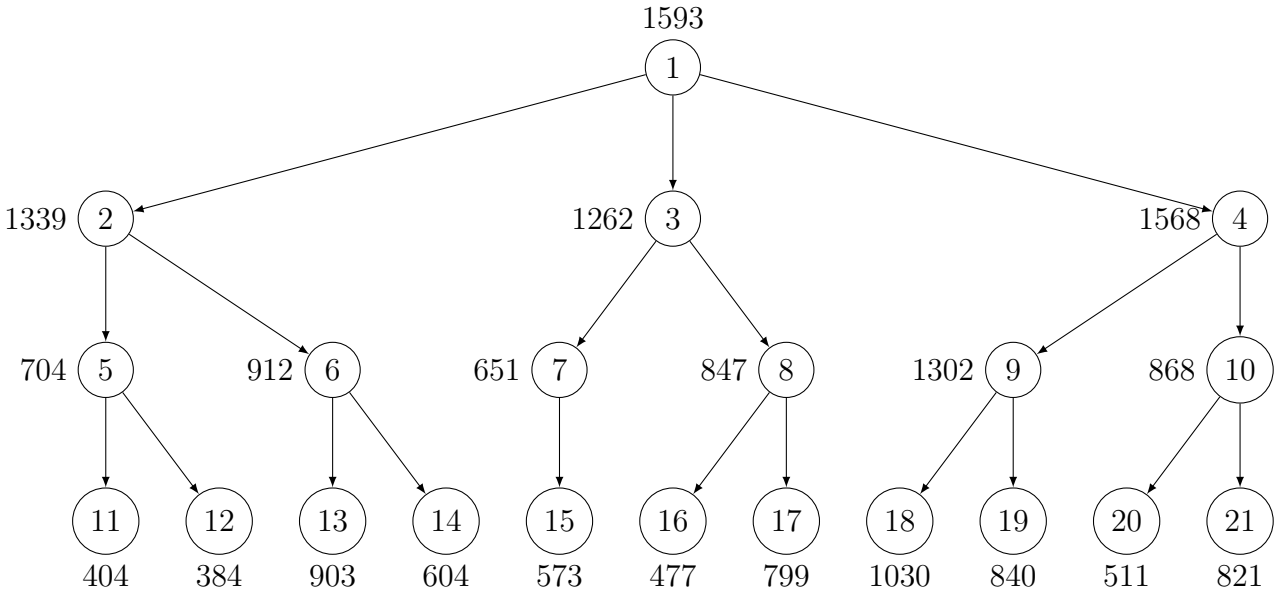
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the 9-th explored node by a depth-first-search exploration.

Remark

— The rood is the first explored node

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



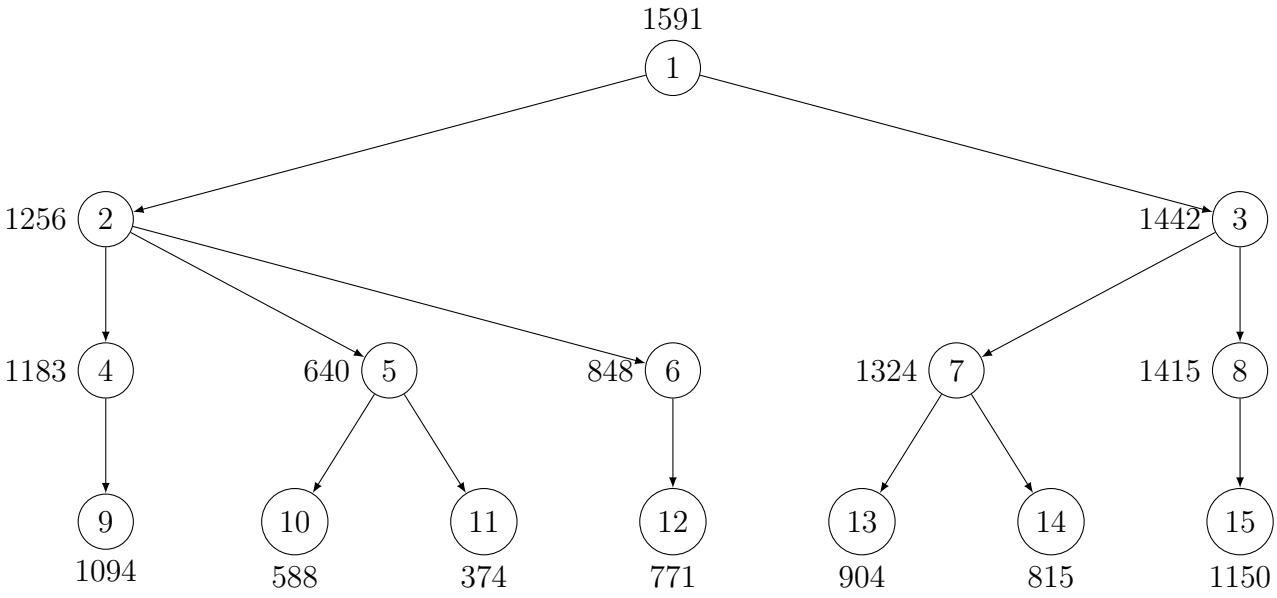
1 1	4 4	7 7	10 10	13 13	16 16	19 19
2 2	5 5	8 8	11 11	14 14	17 17	20 20
3 3	6 6	■ 9	12 12	15 15	18 18	21 21

Question 22 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the nodes that are cut by a depth-first-search exploration.

Remark

- All the solutions are feasible, a node is cut only if its bound is lower than the best current solution
- If a node is cut, the descendant of the nodes are not cut
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



☒ 1	☐ 4	☐ 7	☐ 10	■ 13
☒ 2	■ 5	☐ 8	☐ 11	■ 14
☒ 3	■ 6	☐ 9	☒ 12	☐ 15

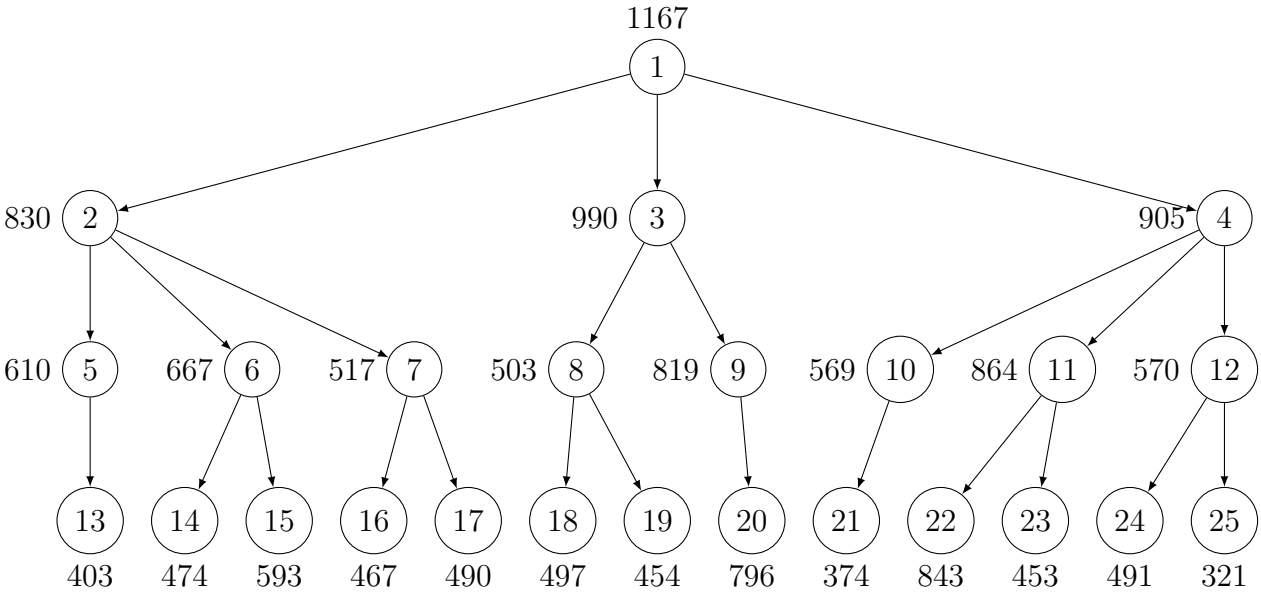
Question 23 ♣

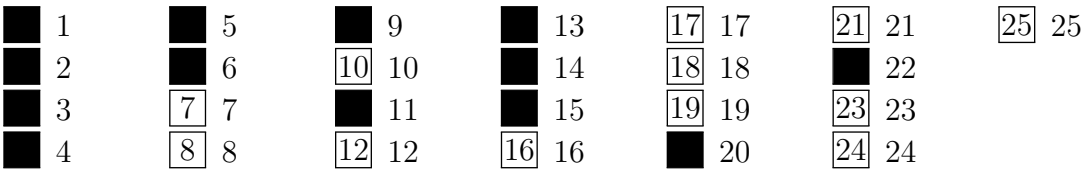
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a depth-first-search exploration.

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



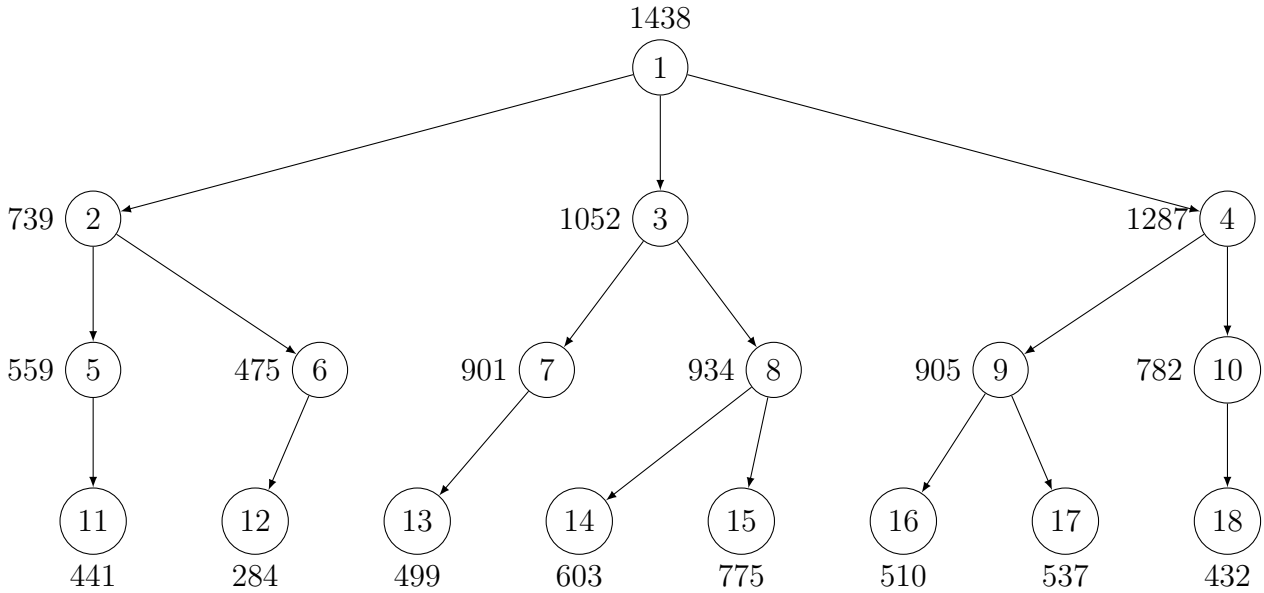


Question 24 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a best-first exploration, until a leaf is explored. (Check also that leaf).

Remark

- All the solutions are feasible
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



Question 25

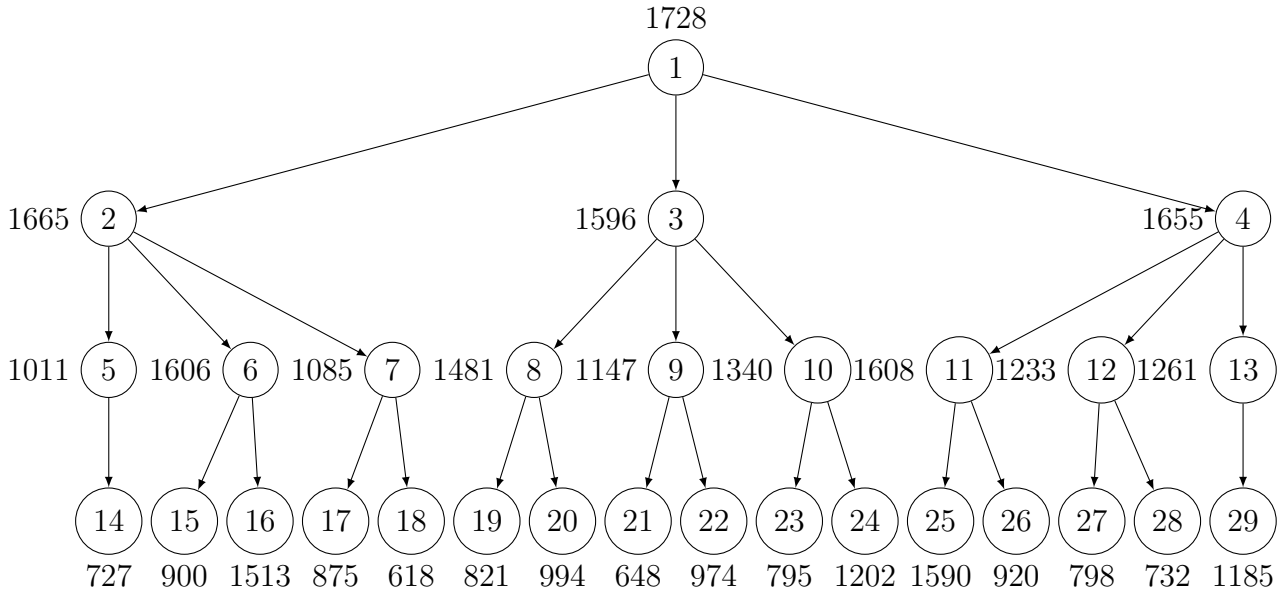
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the 9-th explored node by a depth-first-search exploration.

Remark

— The rood is the first explored node

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



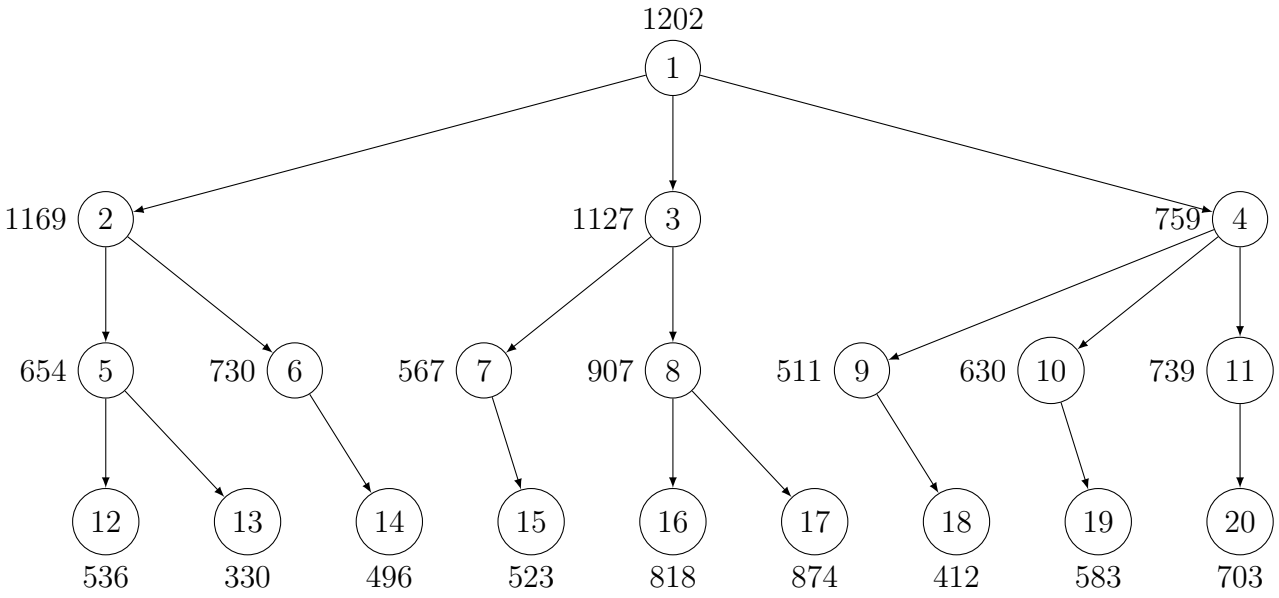
1 1	6 6	11 11	16 16	21 21	26 26
2 2	7 7	12 12	17 17	22 22	27 27
3 3	8 8	13 13	18 18	23 23	28 28
■ 4	9 9	14 14	19 19	24 24	
5 5	10 10	15 15	20 20	25 25	29 29

Question 26 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the nodes that are cut by a depth-first-search exploration.

Remark

- All the solutions are feasible, a node is cut only if its bound is lower than the best current solution
- If a node is cut, the descendant of the nodes are not cut
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



1 1	■ 4	7 7	10 10	■ 13	16 16	19 19
2 2	5 5	8 8	11 11	■ 14	17 17	20 20
3 3	6 6	9 9	12 12	■ 15	18 18	

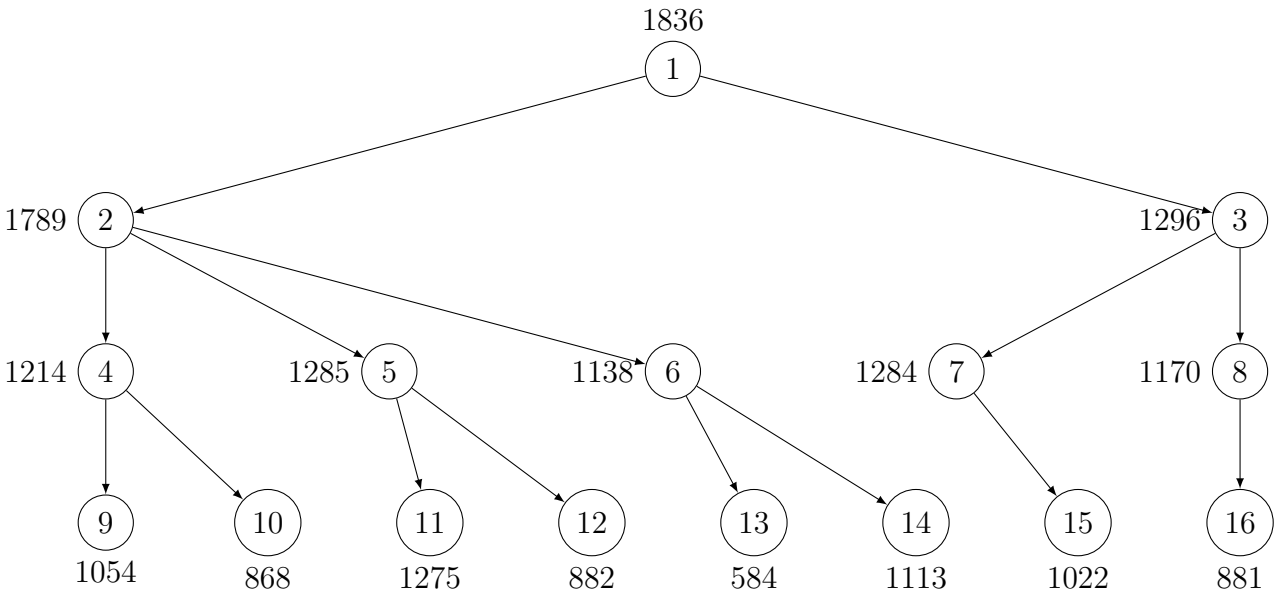
Question 27 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a depth-first-search exploration.

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



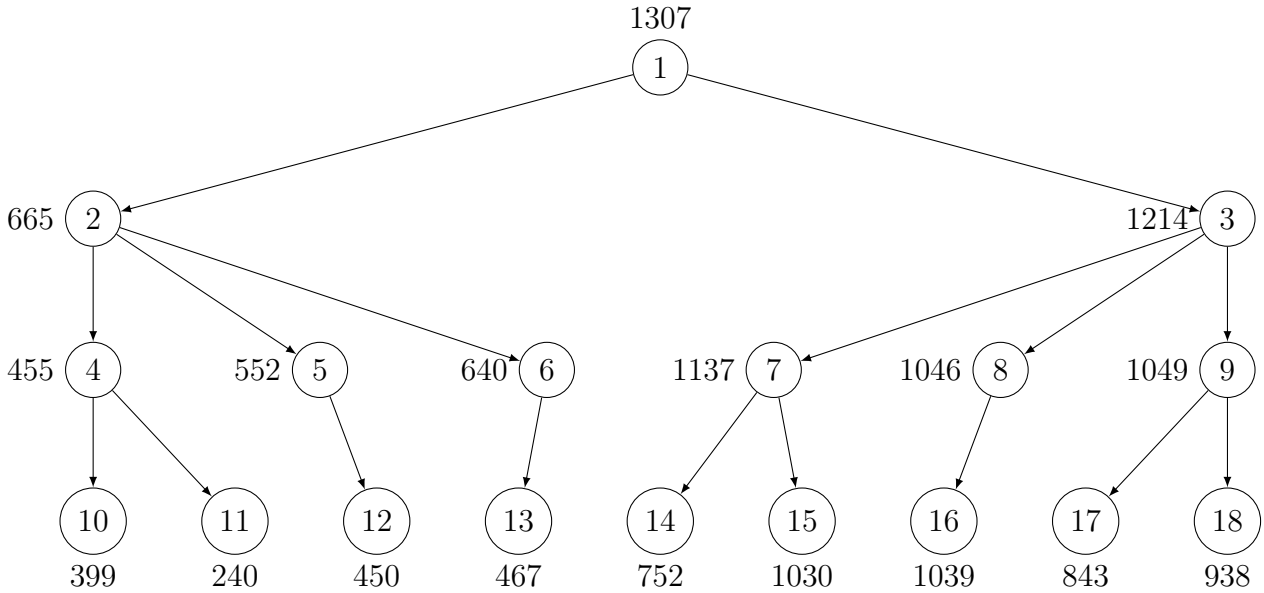
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Question 28 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a best-first exploration, until a leaf is explored. (Check also that leaf).

Remark

- All the solutions are feasible
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



Question 29

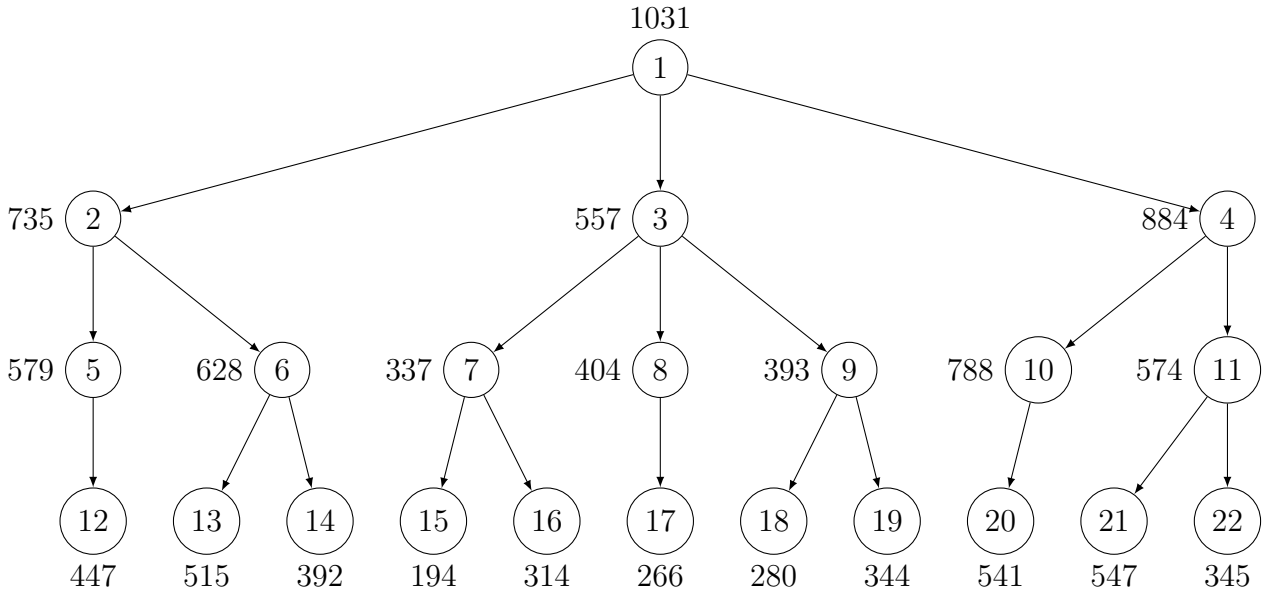
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the 9-th explored node by a depth-first-search exploration.

Remark

— The rood is the first explored node

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



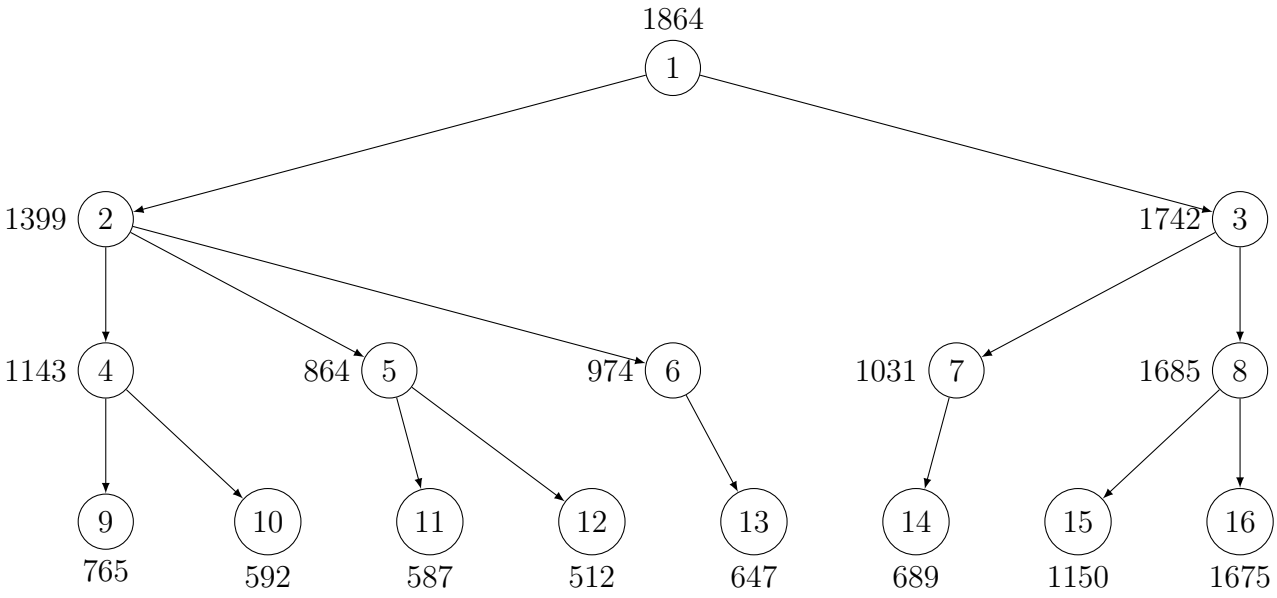
1 1	5 5	9 9	13 13	17 17	21 21
2 2	6 6	■ 10	14 14	18 18	
3 3	7 7	11 11	15 15	19 19	
4 4	8 8	12 12	16 16	20 20	22 22

Question 30 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the nodes that are cut by a depth-first-search exploration.

Remark

- All the solutions are feasible, a node is cut only if its bound is lower than the best current solution
- If a node is cut, the descendant of the nodes are not cut
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



[1] 1	[4] 4	[7] 7	■ 10	■ 13	[16] 16
[2] 2	[5] 5	[8] 8	■ 11	■ 14	
[3] 3	[6] 6	[9] 9	■ 12	[15] 15	

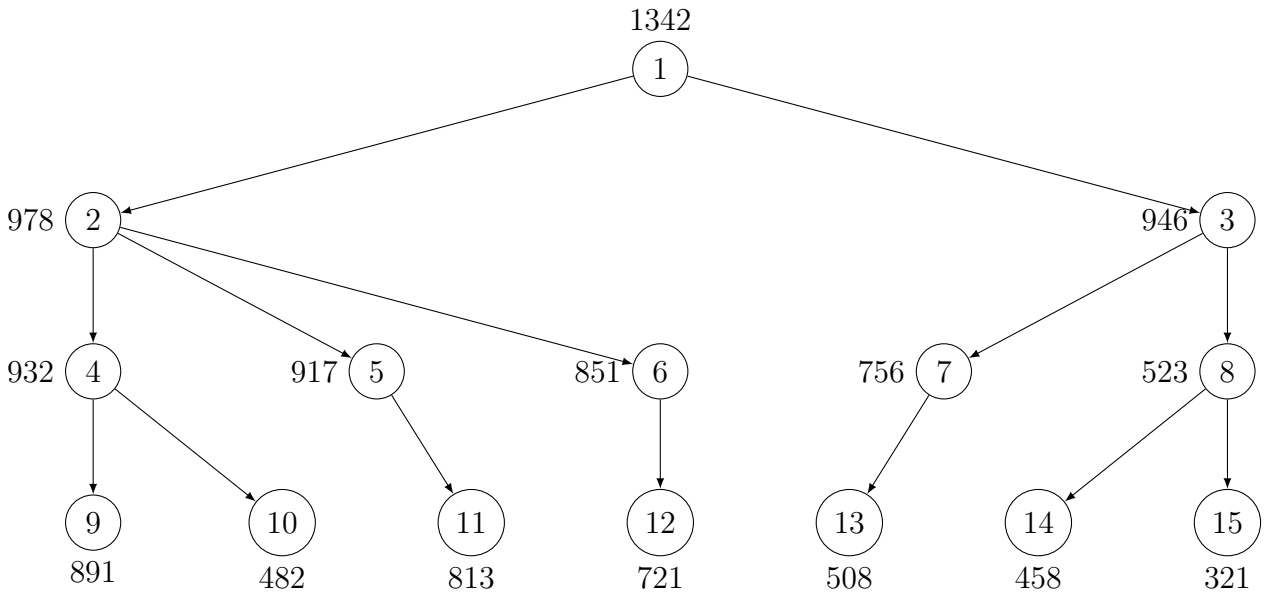
Question 31 ♣

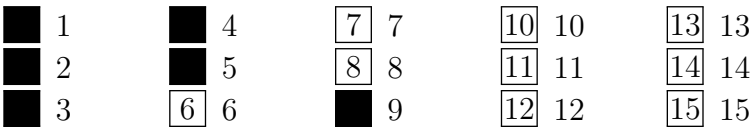
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a depth-first-search exploration.

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



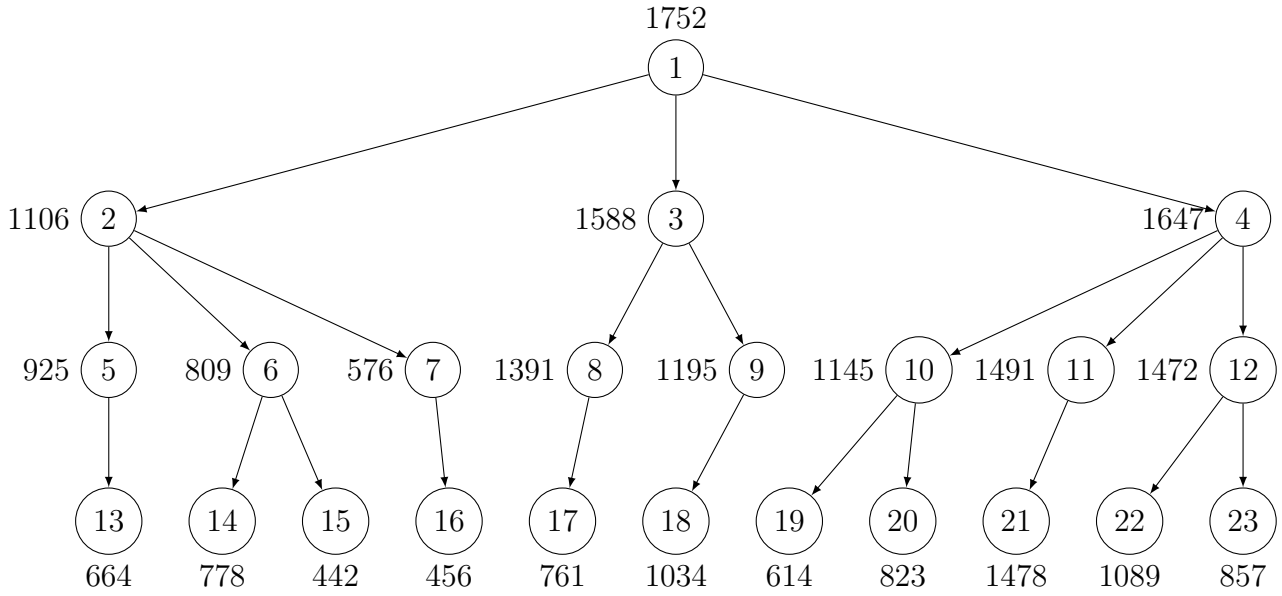


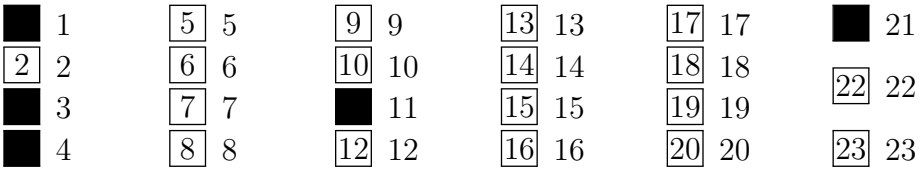
Question 32 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a best-first exploration, until a leaf is explored. (Check also that leaf).

Remark

- All the solutions are feasible
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.





Question 33

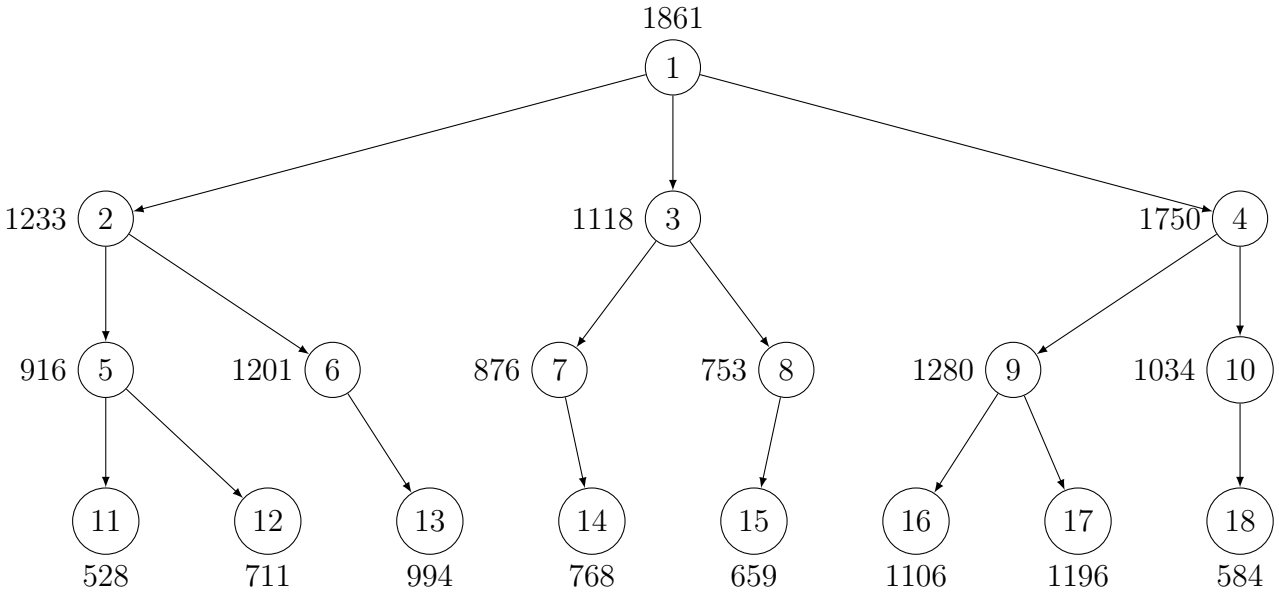
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the 11-th explored node by a depth-first-search exploration.

Remark

— The rood is the first explored node

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



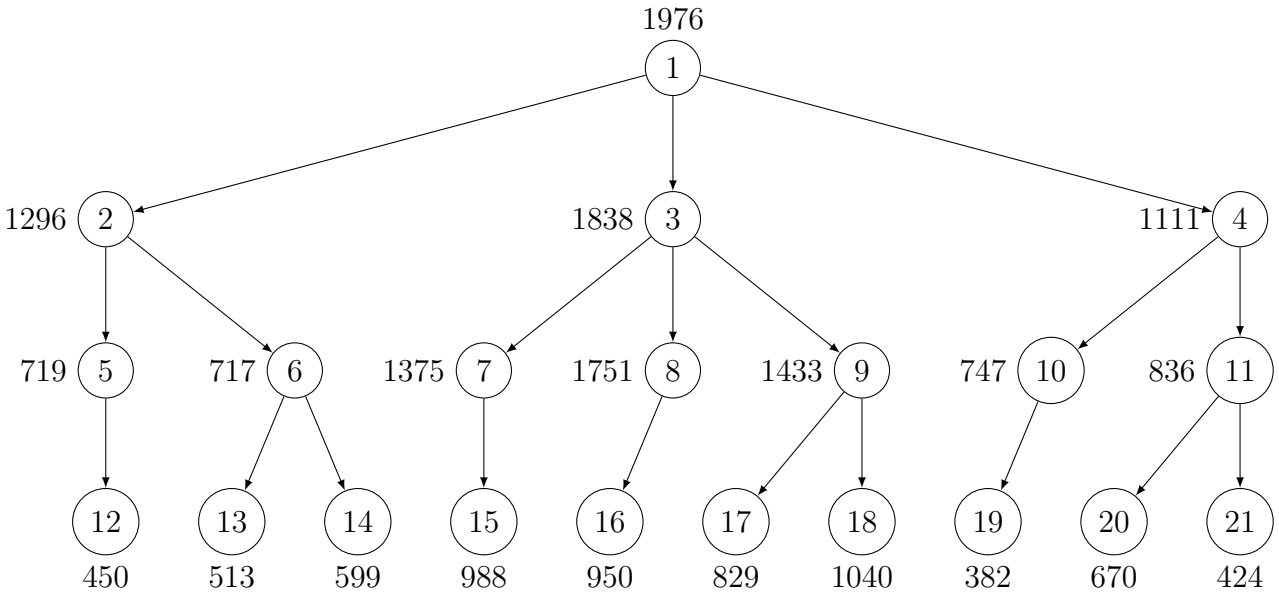
1 1	4 4	7 7	10 10	13 13	■ 16
2 2	5 5	8 8	11 11	14 14	17 17
3 3	6 6	9 9	12 12	15 15	18 18

Question 34 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the nodes that are cut by a depth-first-search exploration.

Remark

- All the solutions are feasible, a node is cut only if its bound is lower than the best current solution
- If a node is cut, the descendant of the nodes are not cut
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



☐ 1	☐ 4	☐ 7	■ 10	☐ 13	■ 16	☐ 19
☐ 2	☐ 5	☐ 8	■ 11	☐ 14	■ 17	☐ 20
☐ 3	☐ 6	☐ 9	☐ 12	☐ 15	☐ 18	☐ 21

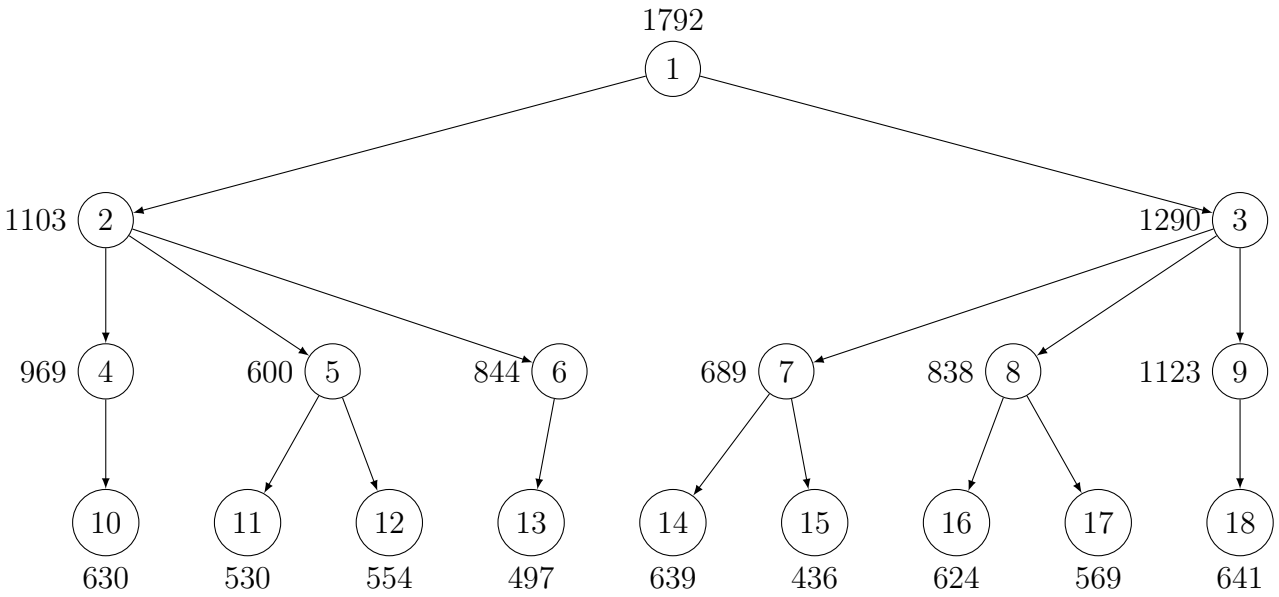
Question 35 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a depth-first-search exploration.

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



1	4	7	10	13 13	16 16
2	5 5	8	11 11	14	17 17
3	6	9	12 12	15 15	18

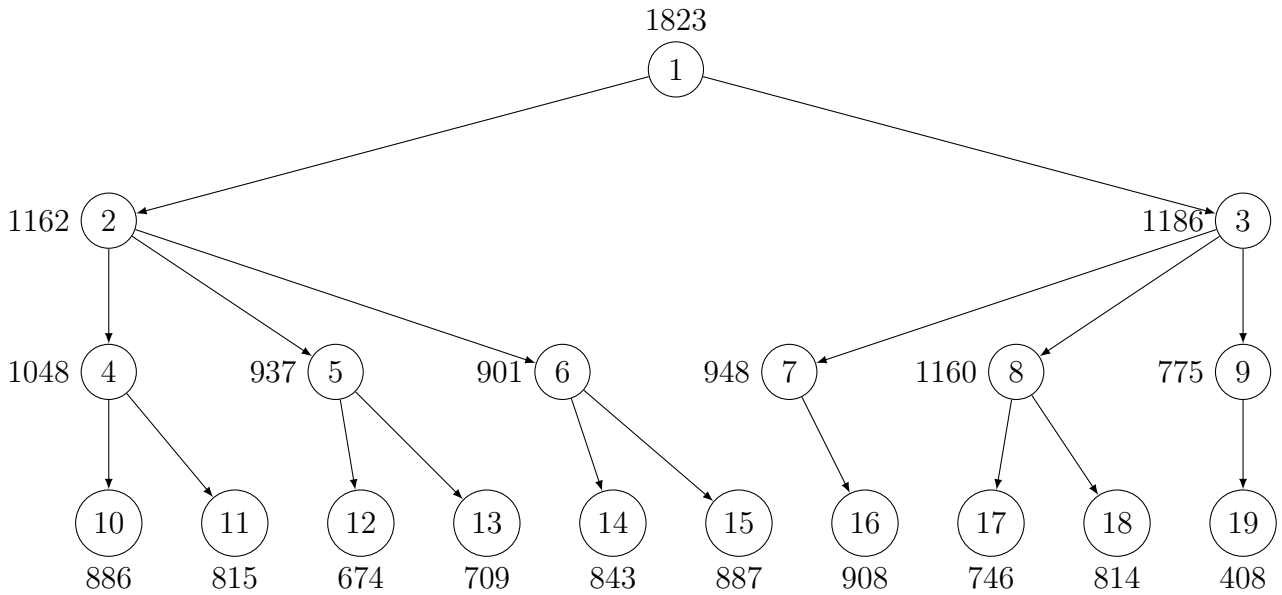
Question 36 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a best-first exploration, until a leaf is explored. (Check also that leaf).

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



Question 37

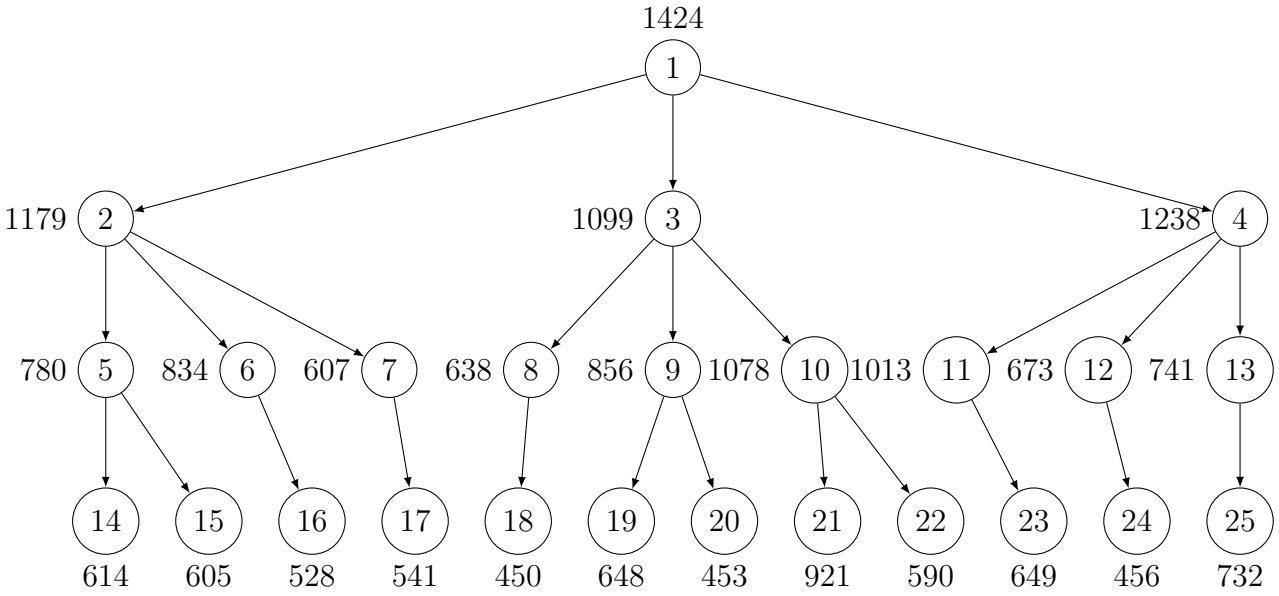
The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the 11-th explored node by a depth-first-search exploration.

Remark

— The rood is the first explored node

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



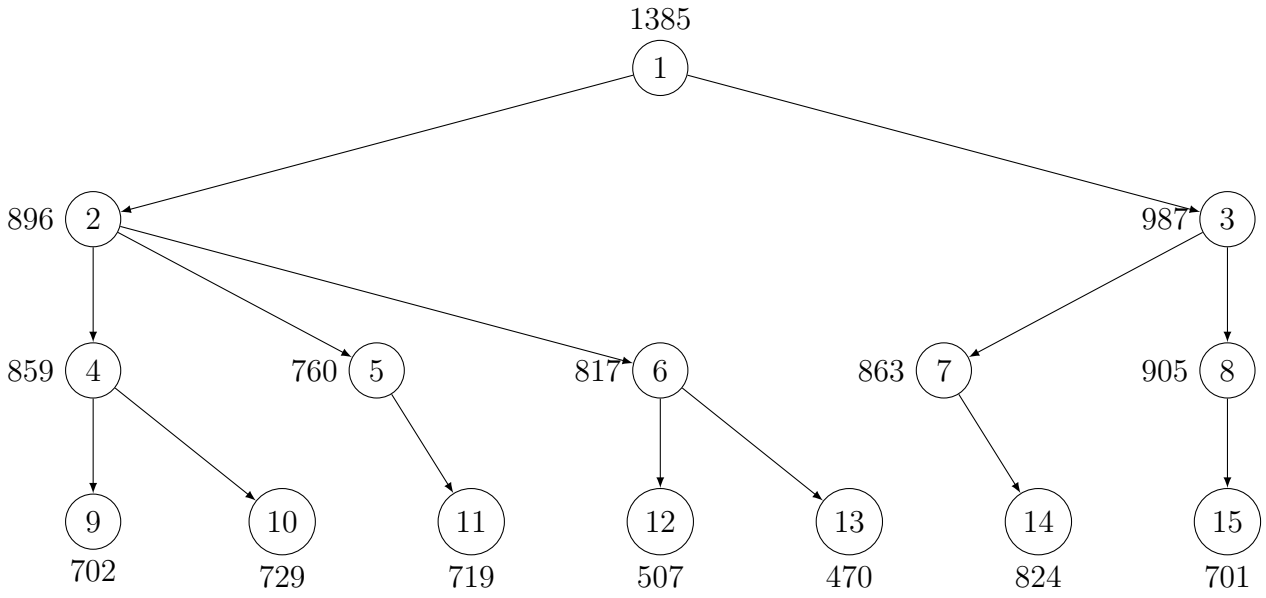
1 1	5 5	9 9	13 13	17 17	■ 21	25 25
2 2	6 6	10 10	14 14	18 18	22 22	
3 3	7 7	11 11	15 15	19 19	23 23	
4 4	8 8	12 12	16 16	20 20	24 24	

Question 38 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check the nodes that are cut by a depth-first-search exploration.

Remark

- All the solutions are feasible, a node is cut only if its bound is lower than the best current solution
- If a node is cut, the descendant of the nodes are not cut
- The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



☐ 1	☐ 4	☐ 7	☐ 10	■ 13
☐ 2	☐ 5	☐ 8	■ 11	☐ 14
☐ 3	☐ 6	☐ 9	■ 12	■ 15

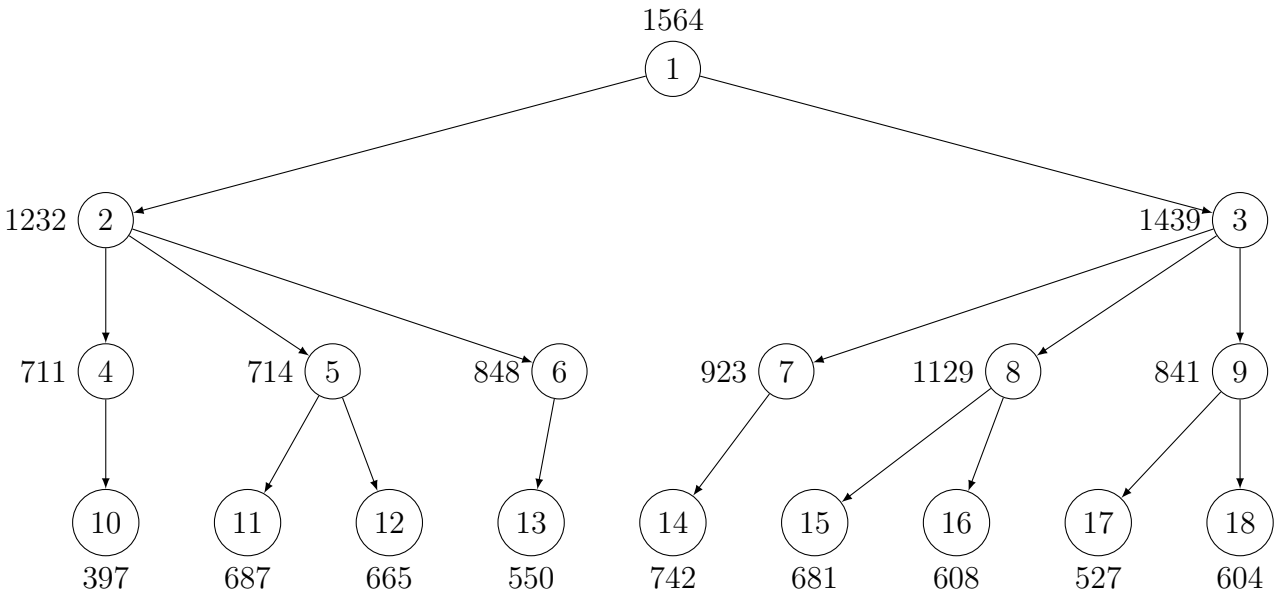
Question 39 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a depth-first-search exploration.

Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



1	4	7	10	13 13	16 16
2	5	8	11	14	17 17
3	6	9	12 12	15 15	18 18

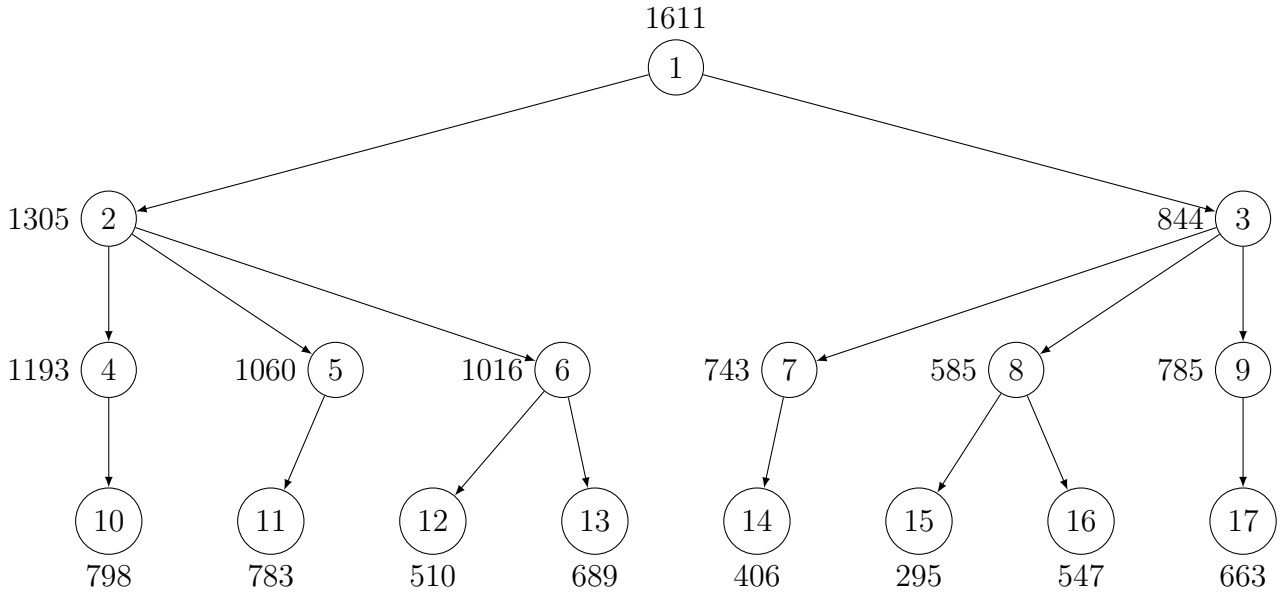
Question 40 ♣

The whole exploration tree of a Branch and Bound technique used to solve a maximisation problem is drawn below. Each node is associated with an upper bound. The value indicated next to a leaf is the weight of the associated feasible solution. Check all the nodes that will be explored by a best-first exploration, until a leaf is explored. (Check also that leaf).

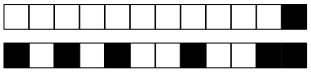
Remark

— All the solutions are feasible

— The maximization problem we solve is not specified. However you do not need to know that problem to answer the question.



■ 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ☐ 7 ☐ 8 ☐ 9 ■ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17



Entraînement - Training

Noircissez complètement ci-dessous les 3 premières lettres de votre nom de famille et la première lettre de votre prénom. Par exemple, pour Jean Dupont, cochez J, D, U, P ; pour Henri Harley, cochez seulement H, A, R ; pour Bernard Ca, cochez seulement A, B, C.

Check entirely the 3 first letters of your lastname and the first letter of your firstname. For instance, for Jean Dupont, check J, D, U, P ; for Henri Harley, check only H, A, R ; for Bernard Ca, check only A, B, C.

A B C D E F G H I J K L M

N O P Q R S T U V W X Y Z

Then write your lastname and firstname below.

Nom et prénom :

.....

Les réponses aux questions sont à donner exclusivement sur cette feuille. Les réponses données sur les feuilles précédentes ne seront pas prises en compte. Pour cocher une case, il faut la **noircir complètement**. Vous pouvez effacer votre réponse à la gomme ou avec du blanc, attention à ne pas effacer la case à cocher. Si vous êtes dans l'impossibilité de corriger une erreur, cette page est dupliquée au verso ; vous pouvez alors barrer cette feuille ci et répondre au verso.

Question 1 : 1 2 3 4 5 6 7 8 ■ 10 11 12 13 14 15 16 17 18 19 20 21

Question 2 : 1 2 3 4 5 6 7 ■ 9 10 11 ■ ■ 14 15 16 ■ ■ ■

Question 3 : ■ ■ ■ ■ ■ ■ 7 ■ ■ ■ ■ 12 13 14 15 ■ 17 ■

Question 4 : ■ ■ 3 ■ 5 ■ 7 8 9 10 ■ 12 ■ 14 15 16 17 18 19 20 21 22

Question 5 : 1 2 3 4 5 6 7 8 9 ■ 11 12 13 14 15 16 17 18 19 20 21 22 23

Question 6 : 1 2 3 4 5 6 7 8 ■ 10 11 ■ ■ 14 ■ ■ 17 ■ 19 20 ■ 22 ■ 24 25 26 27

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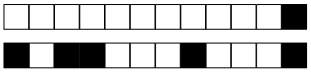
Question 8 : ■ ■ ■ 4 5 6 ■ ■ 9 10 11 12 13 14 15 16 ■ 18 19 20



Question 9 : 1 2 3 4 5 6 7 8 ■ 10 11 12 13 14 15 16 17 18

Question 10 : 1 2 3 4 5 ■ 7 8 9 ■ 11 12 13 ■

Question 11 : ■ ■ ■ ■ ■ ■ ■ ■ ■ 10 ■ 12 ■ ■ 15 16

Question 12 : ■ ■ ■ 4 5 ■ 7 ■ 9 10 11 12 13 14 15 16 17 18 ■ 20

Question 13 : 1 2 3 4 5 6 7 8 9 ■ 11 12 13 14 15 16 17 18

Question 14 : 1 2 3 4 5 ■ ■ 8 9 ■ 11 12 13 14 15 ■

Question 15 : ■ ■ ■ ■ 5 ■ 7 ■ ■ ■ 11 12 ■ 14 15 16 17 ■ 19

Question 16 : ■ 2 ■ ■ 5 6 7 ■ ■ 10 ■ ■ 13 14 15 16 17 18 19 20 21 ■ 23

Question 17 : 1 2 3 4 5 6 7 ■ 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Question 18 : 1 2 3 4 5 6 7 ■ 9 ■ 11 12 13 ■ 15 16 17 18 ■ 20

Question 19 : ■ ■ ■ ■ 5 ■ ■ ■ ■ ■ 11 12 13 14 15 ■

Question 20 : ■ ■ ■ ■ 5 6 ■ ■ 9 10 11 ■ 13 14 15 16 ■ 18 19 20 21 22 23 24 25 26

Question 21 : 1 2 3 4 5 6 7 8 ■ 10 11 12 13 14 15 16 17 18 19 20 21

Question 22 : 1 2 3 4 ■ ■ 7 8 9 10 11 12 ■ ■ 15

Question 23 : ■ ■ ■ ■ ■ ■ 7 8 ■ 10 ■ 12 ■ ■ ■ 16 17 18 19 ■ 21 ■ 23 24 25

Question 24 : ■ 2 ■ ■ 5 6 ■ ■ ■ ■ 11 12 13 14 ■ 16 17 18

Question 25 : 1 2 3 ■ 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

Question 26 : 1 2 3 ■ 5 6 7 8 9 10 11 12 ■ ■ ■ 16 17 18 19 20

Question 27 : ■ ■ ■ ■ ■ 6 ■ 8 ■ 10 ■ 12 13 14 15 16

Question 28 : ■ 2 ■ 4 5 6 ■ ■ ■ 10 11 12 13 14 15 ■ 17 18

Question 29 : 1 2 3 4 5 6 7 8 9 ■ 11 12 13 14 15 16 17 18 19 20 21 22

Question 30 : 1 2 3 4 5 6 7 8 9 ■ ■ ■ ■ ■ 15 16

Question 31 : ■ ■ ■ ■ ■ 6 7 8 ■ 10 11 12 13 14 15

Question 32 : ■ 2 ■ ■ 5 6 7 8 9 10 ■ 12 13 14 15 16 17 18 19 20 ■ 22 23

Question 33 : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 ■ 17 18

Question 34 : 1 2 3 4 5 6 7 8 9 ■ ■ 12 13 14 15 ■ ■ 18 19 20 21

Question 35 : ■ ■ ■ ■ 5 ■ ■ ■ ■ ■ 11 12 13 ■ 15 16 17 ■

Question 36 : ■ ■ ■ ■ ■ 6 ■ ■ 9 10 11 12 13 14 15 ■ 17 18 19

Question 37 : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 ■ 22 23 24 25

Question 38 : 1 2 3 4 5 6 7 8 9 10 ■ ■ ■ 14 ■

Question 39 : ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ 12 13 ■ 15 16 17 18

Question 40 : ■ ■ ■ ■ ■ ■ 7 8 9 ■ 11 12 13 14 15 16 17