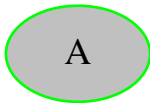


A

A

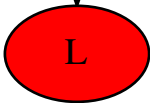
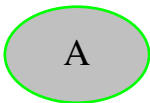
Inserted A



AL

A

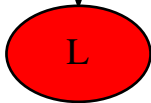
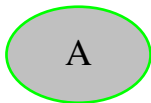
Looking for place to insert L



AL

AL

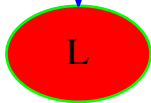
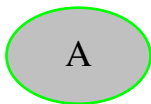
Inserted L



ALG

AL

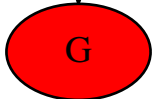
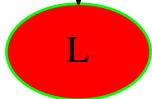
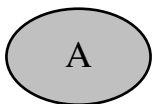
Looking for place to insert G



ALG

AL

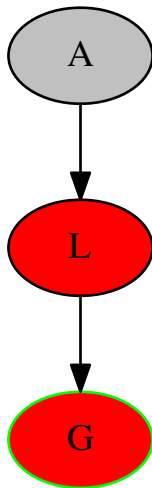
Looking for place to insert G



ALG

AGL

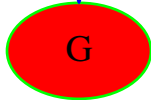
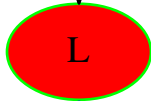
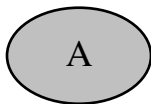
Inserted G



ALG

AGL

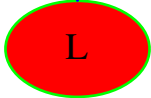
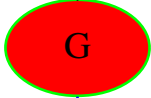
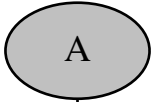
Fixing tree - Case 2: Black Uncle: Rotating tree



ALG

AGL

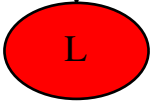
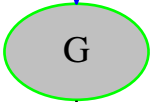
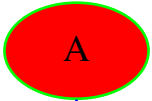
Performing right rotation



ALG

AGL

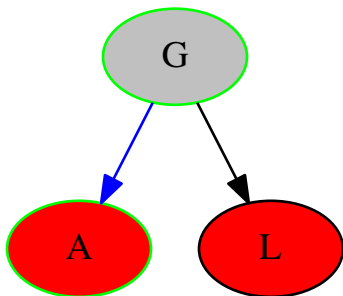
Performed right rotation



ALG

AGL

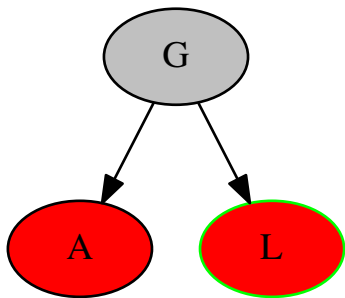
Performing left rotation



ALG

AGL

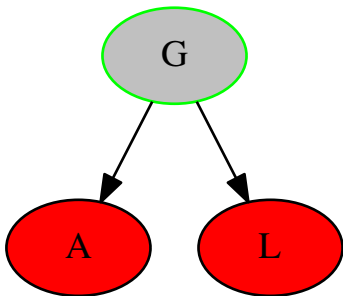
Performed left rotation



ALG

AGL

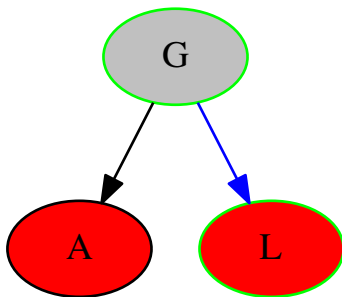
Fixing tree - Case 2: Black Uncle: Rotated tre



ALGO

AGL

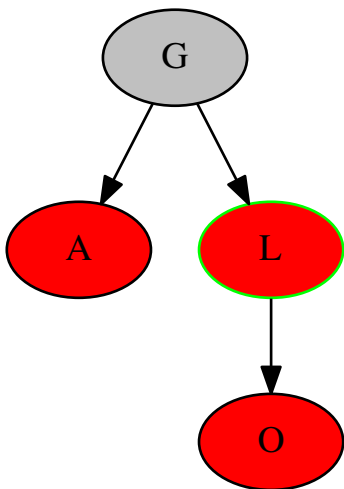
Looking for place to insert O



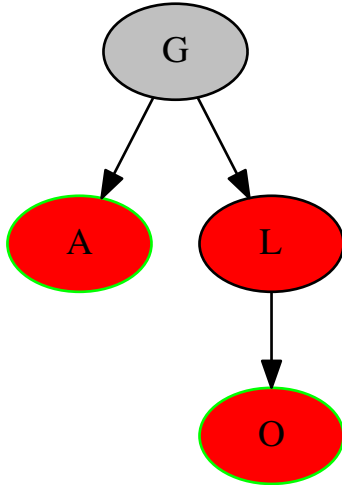
ALGO

AGL

Looking for place to insert O



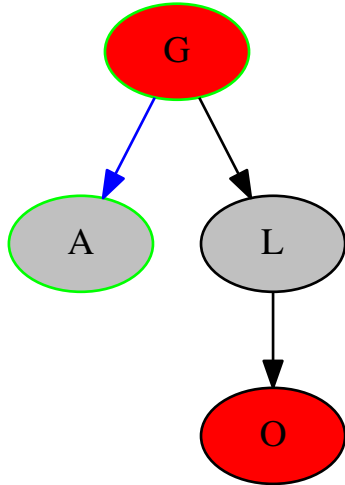
ALGO
AGLO
Inserted O



ALGO

AGLO

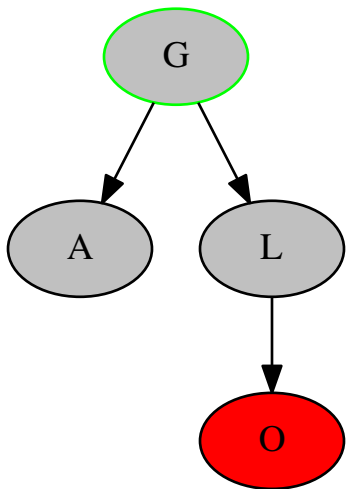
Fixing tree - Case 1: Red Uncle: Recoloring nodes



ALGO

AGLO

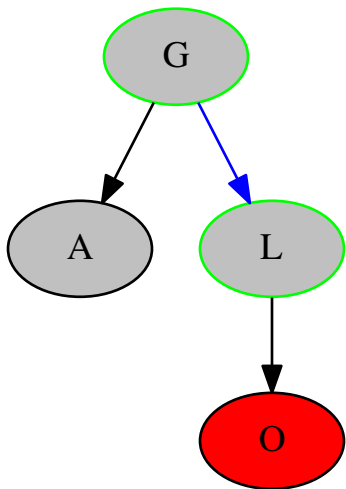
Fixing tree - Case 1: Red Uncle: Recolored nodes



ALGOR

AGLO

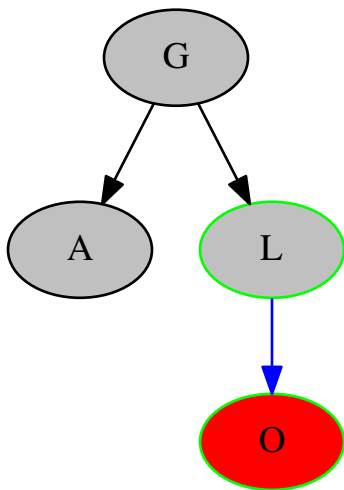
Looking for place to insert R



ALGOR

AGLO

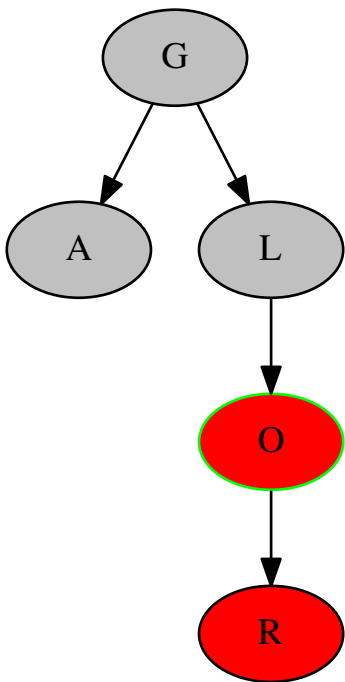
Looking for place to insert R



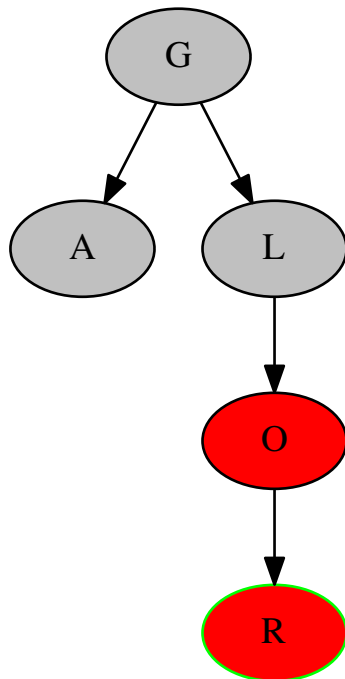
ALGOR

AGLO

Looking for place to insert R



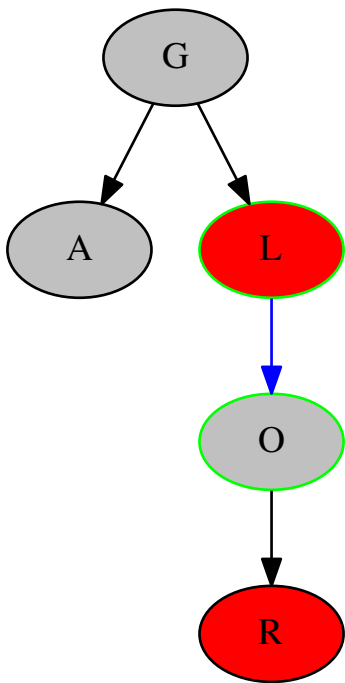
ALGOR
AGLOR
Inserted R



ALGOR

AGLOR

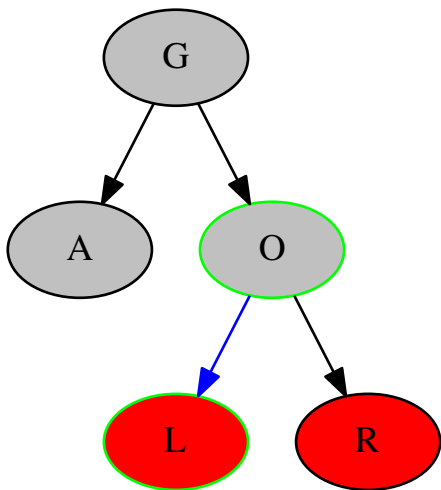
Fixing tree - Case 2: Black Uncle: Rotating tree



ALGOR

AGLOR

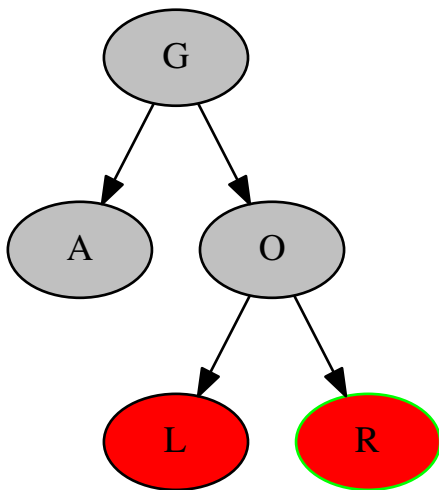
Performing left rotation



ALGOR

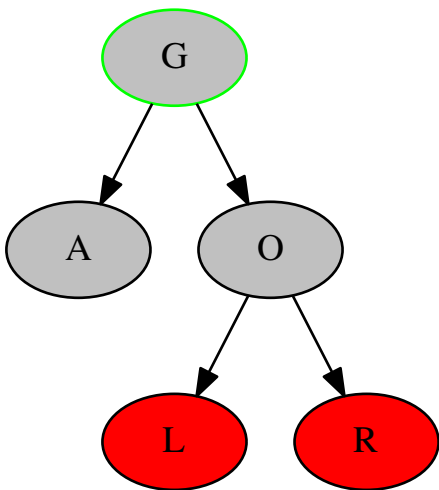
AGLOR

Performed left rotation



ALGOR
AGLOR

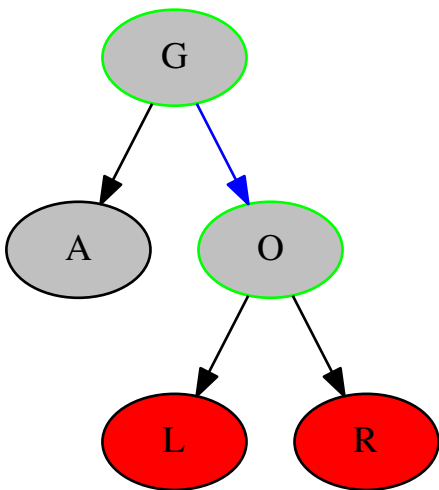
Fixing tree - Case 2: Black Uncle: Rotated tre



ALGORI

AGLOR

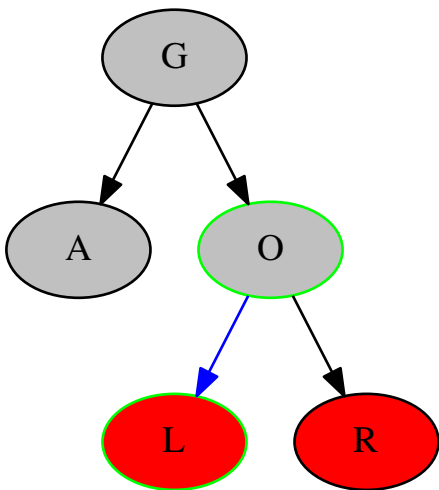
Looking for place to insert I



ALGORI

AGLOR

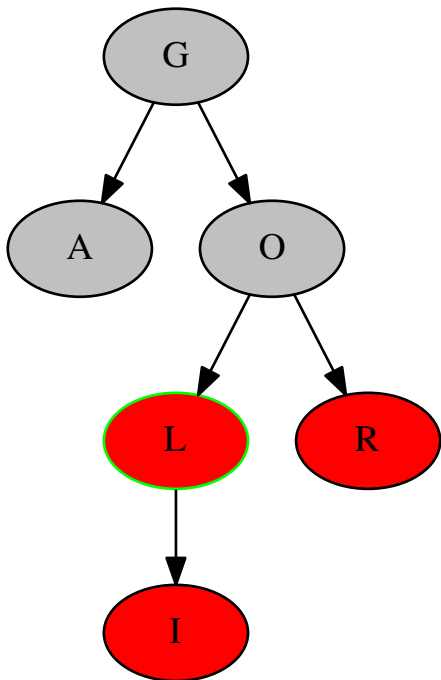
Looking for place to insert I



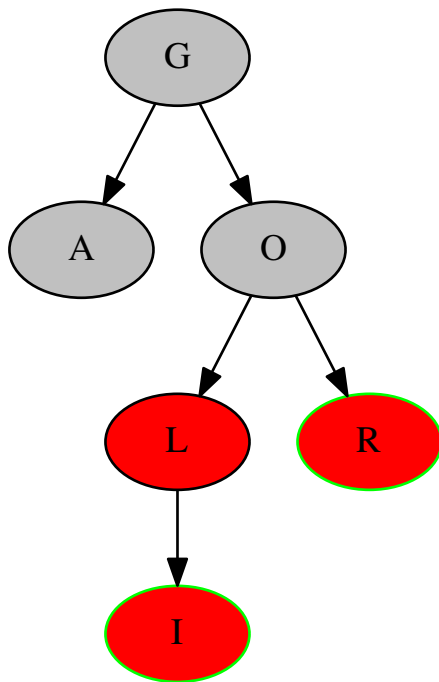
ALGORI

AGLOR

Looking for place to insert I



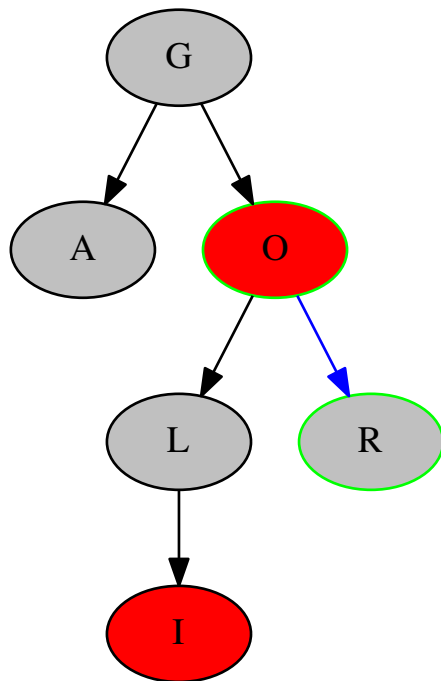
ALGORI
AGILOR
Inserted I



ALGORI

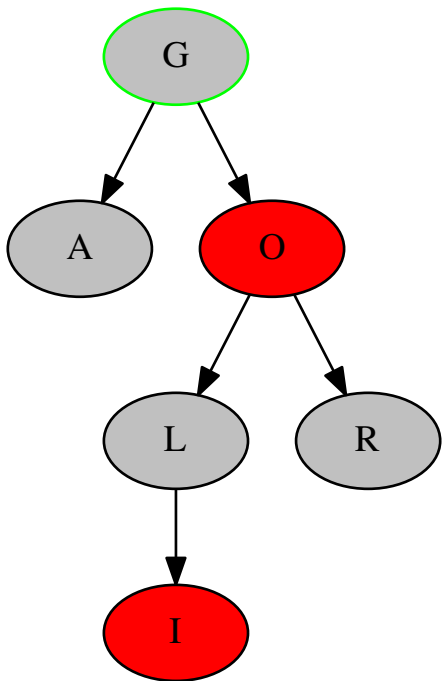
AGILOR

Fixing tree - Case 1: Red Uncle: Recoloring nodes



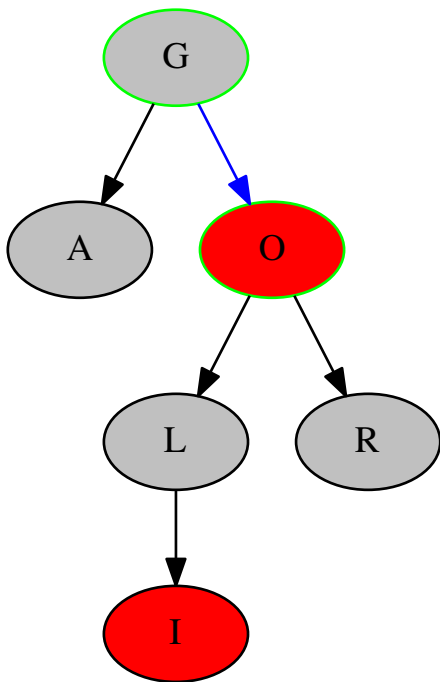
ALGORI
AGILOR

Fixing tree - Case 1: Red Uncle: Recolored nodes



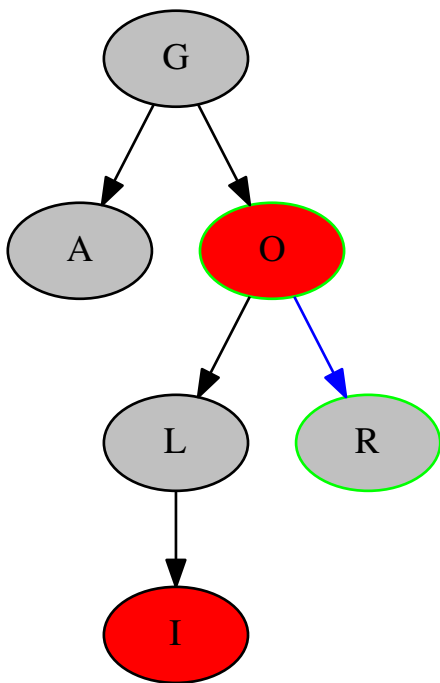
ALGORIT
AGILOR

Looking for place to insert T



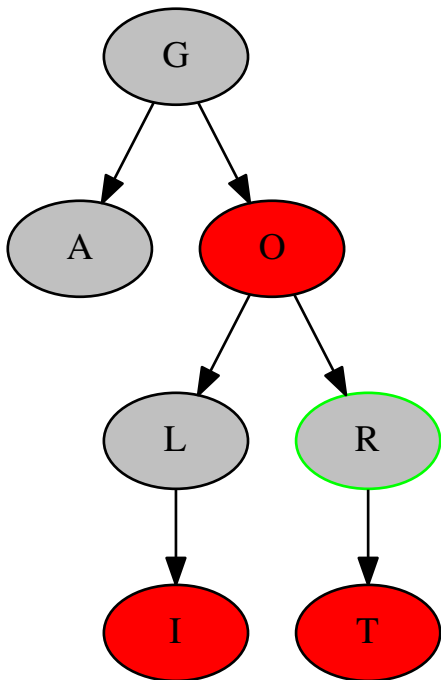
ALGORIT
AGILOR

Looking for place to insert T

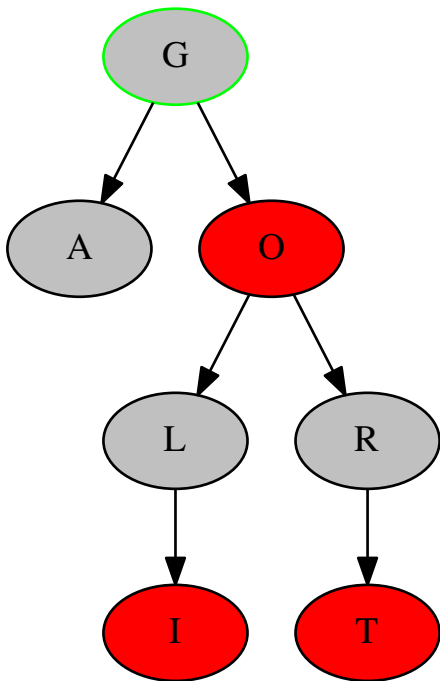


ALGORIT
AGILOR

Looking for place to insert T

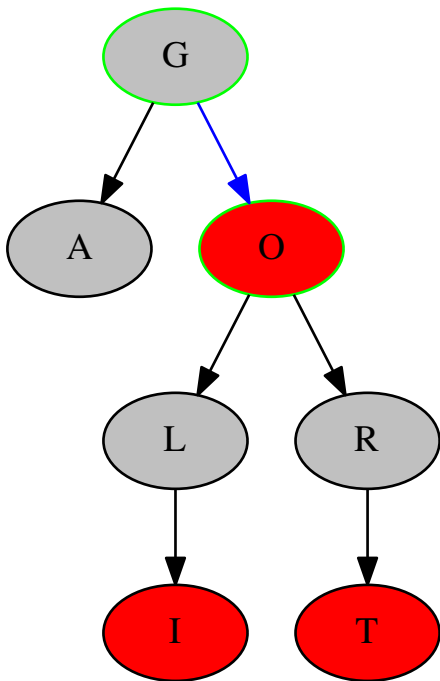


ALGORIT
AGILORT
Inserted T



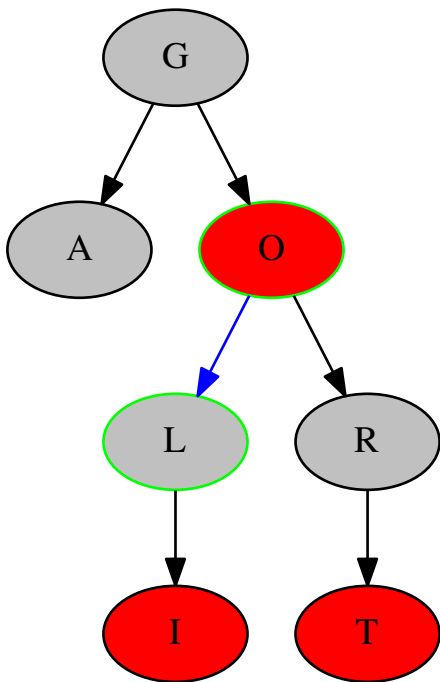
ALGORITHM
AGILORT

Looking for place to insert H



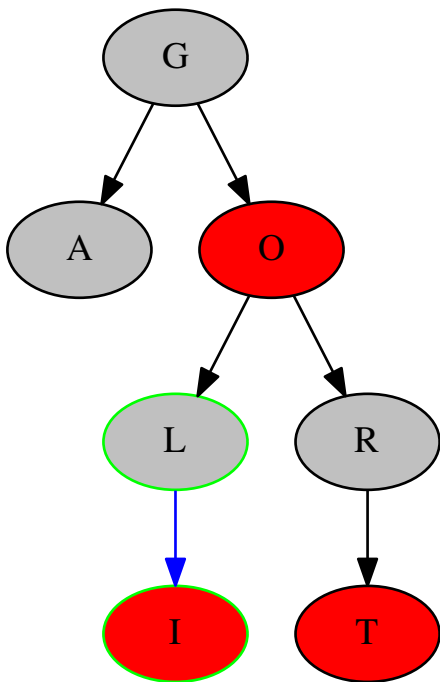
ALGORITHM
AGILORT

Looking for place to insert H



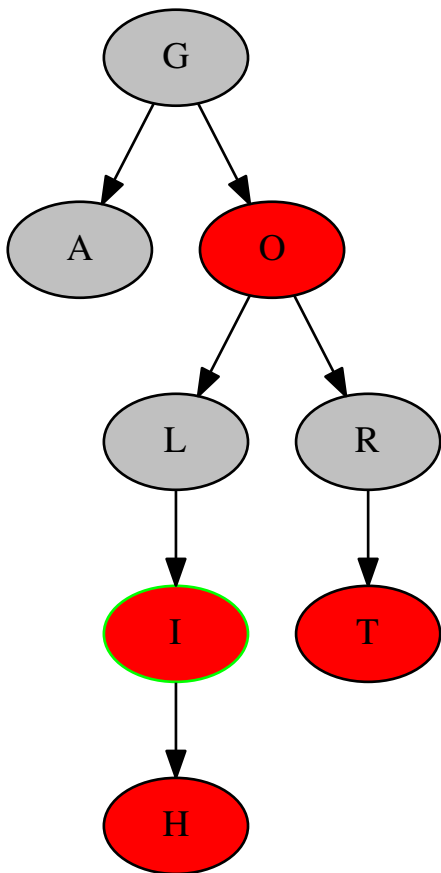
ALGORITHM
AGILORT

Looking for place to insert H

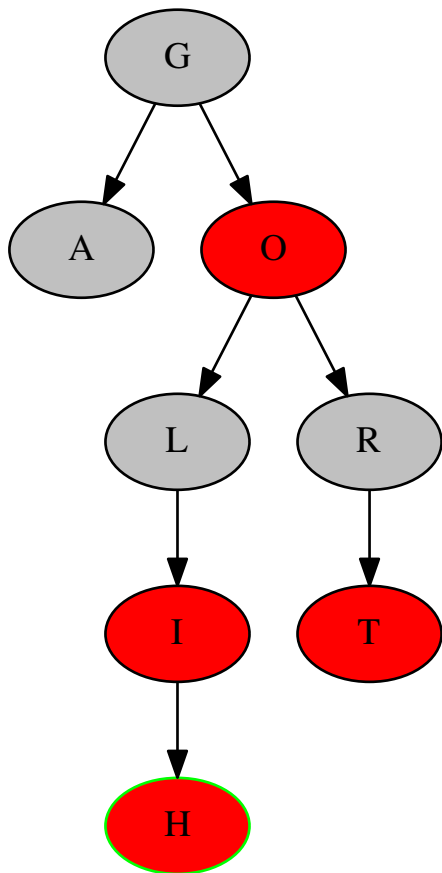


ALGORITHM
AGILORT

Looking for place to insert H

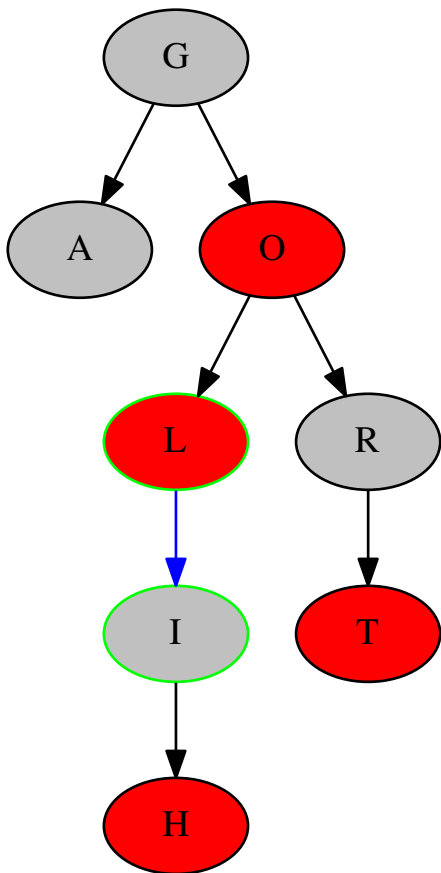


ALGORITHM
AGHILORT
Inserted H



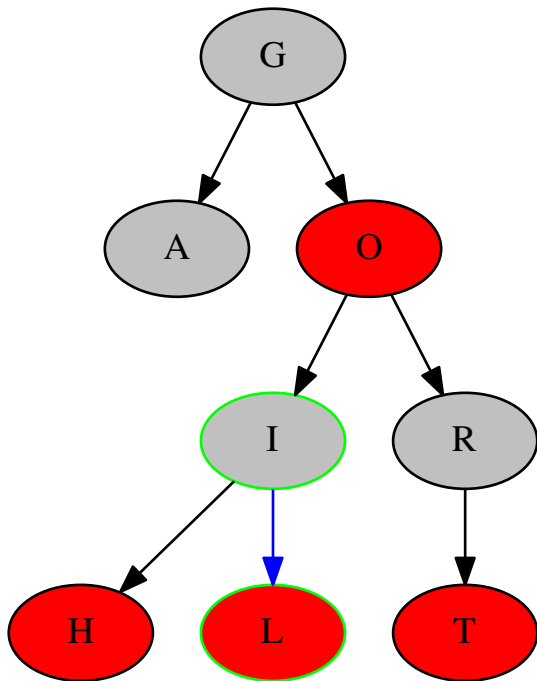
ALGORITHM
AGHILORT

Fixing tree - Case 2: Black Uncle: Rotating tree



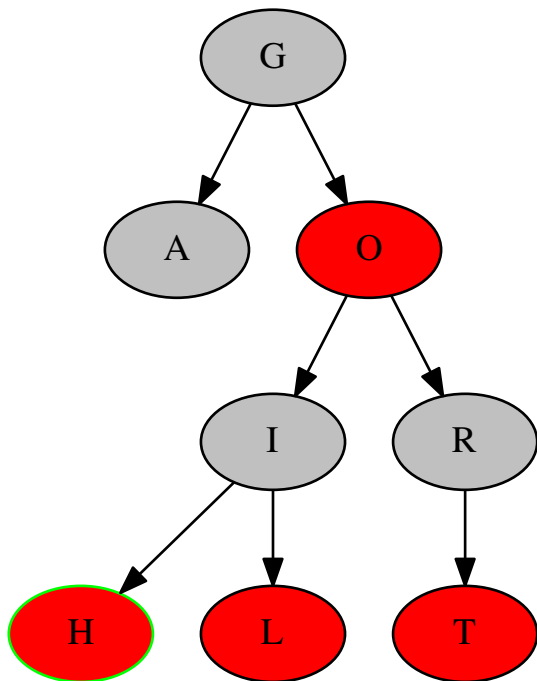
ALGORITHM
AGHILORT

Performing right rotation



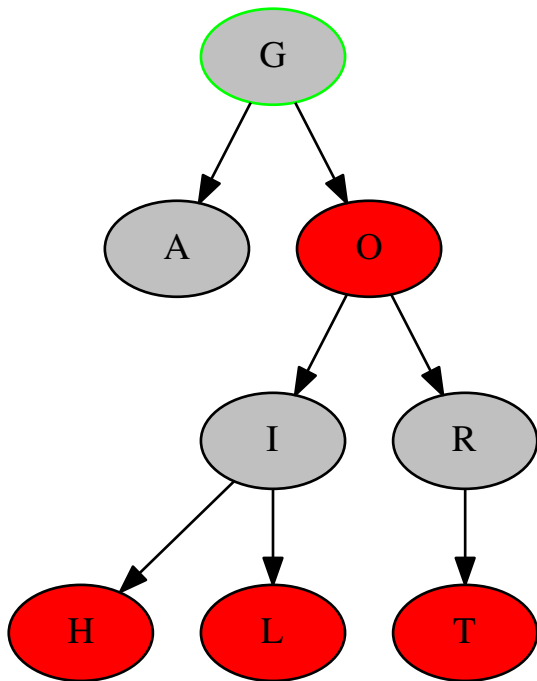
ALGORITHM
AGHILORT

Performed right rotation



ALGORITHM
AGHILORT

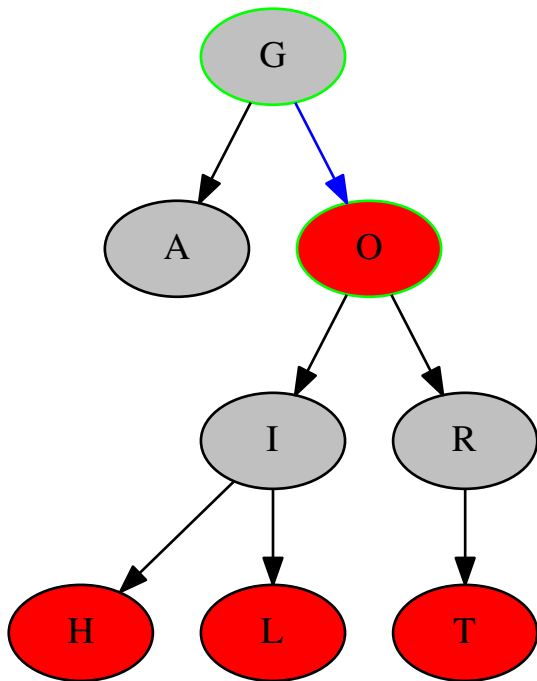
Fixing tree - Case 2: Black Uncle: Rotated tree



ALGORITHM

AGHILORT

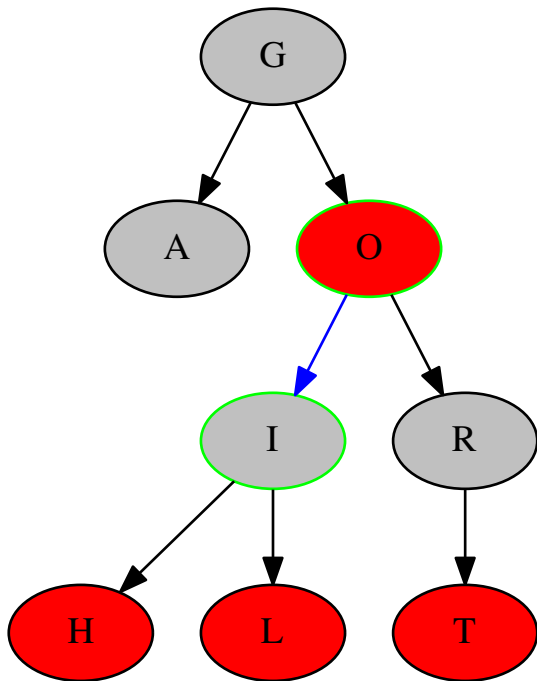
Looking for place to insert M



ALGORITHM

AGHILORT

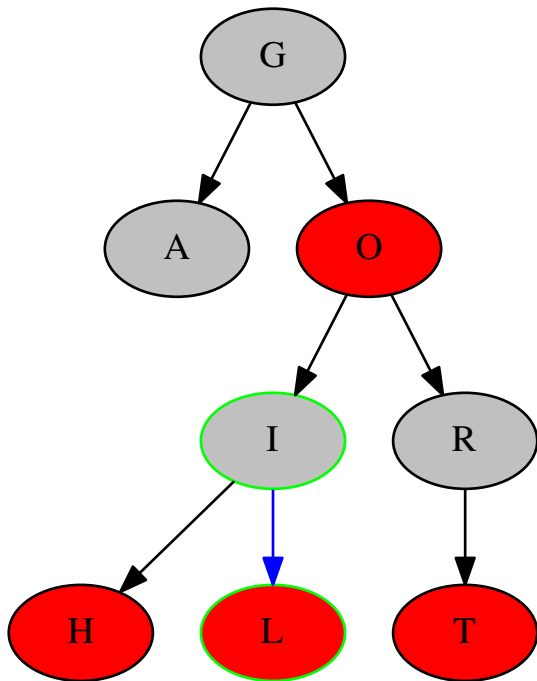
Looking for place to insert M



ALGORITHM

AGHILORT

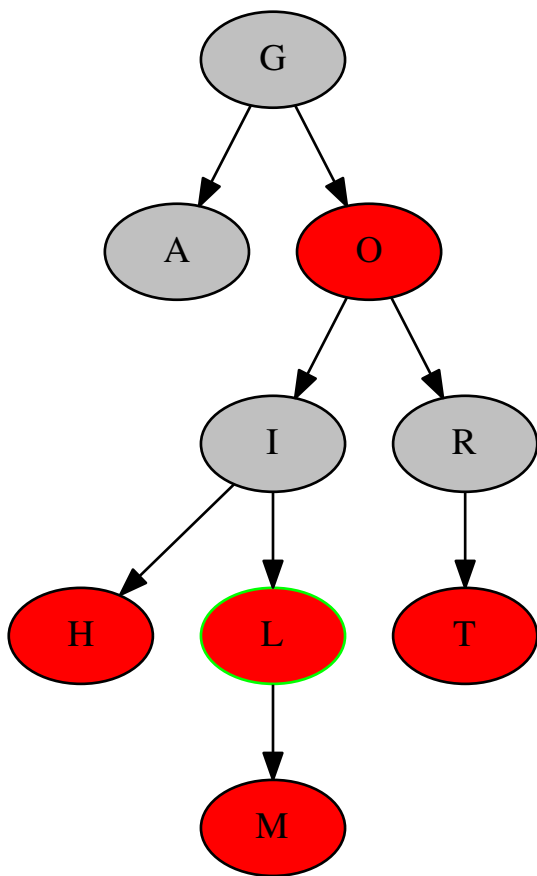
Looking for place to insert M



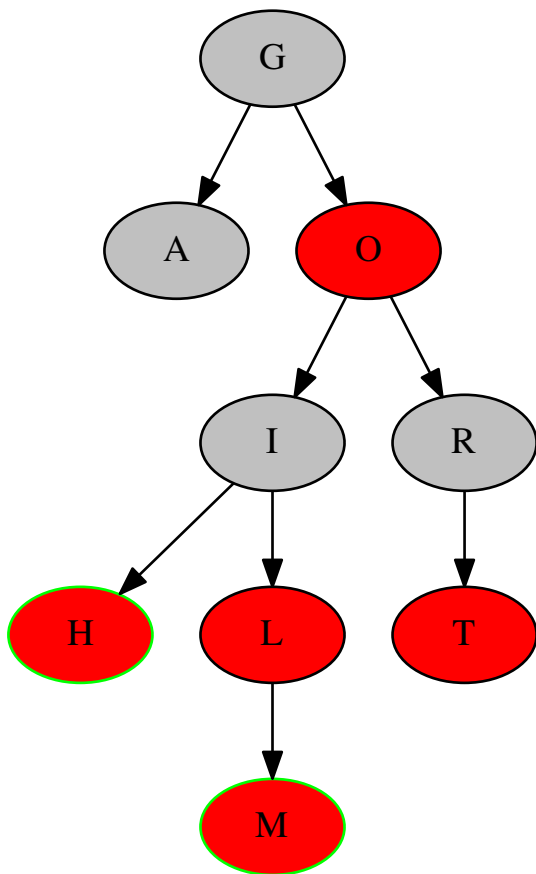
ALGORITHM

AGHILORT

Looking for place to insert M

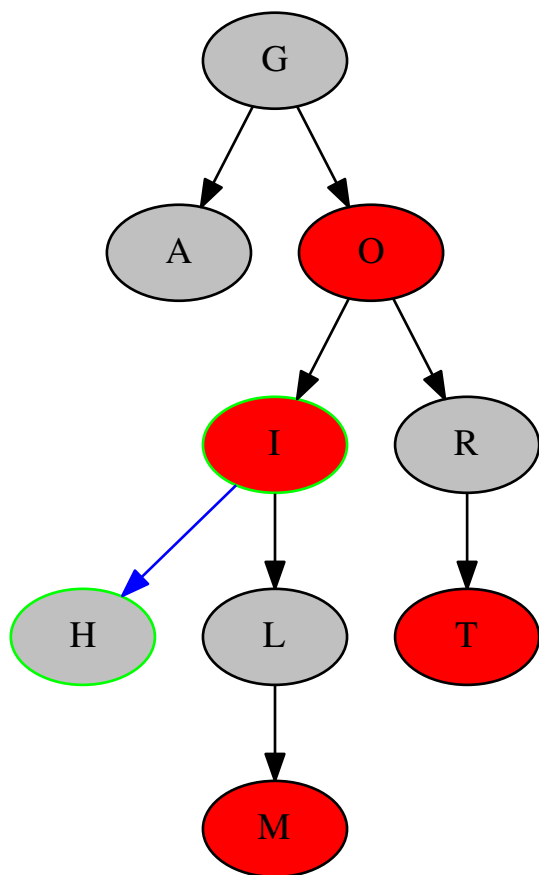


ALGORITHM
AGHILMORT
Inserted M



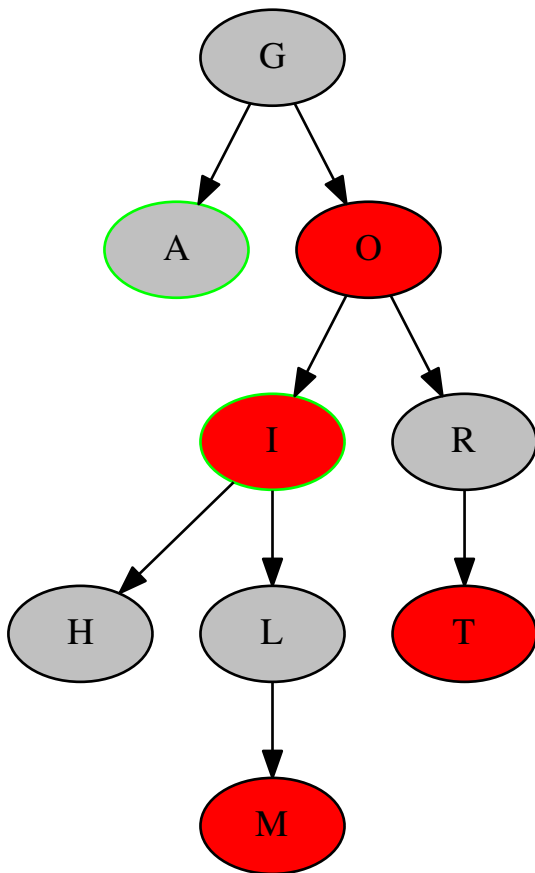
ALGORITHM
AGHILMORT

Fixing tree - Case 1: Red Uncle: Recoloring nodes



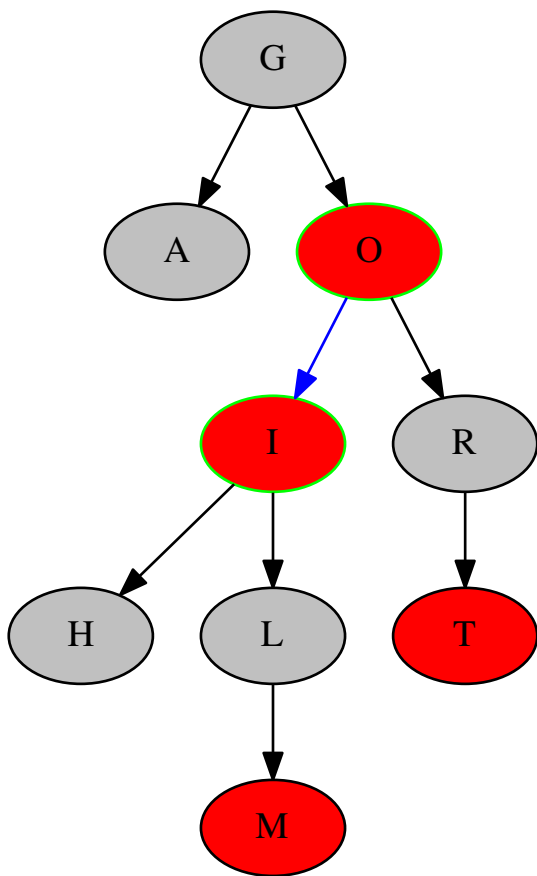
ALGORITHM
AGHILMORT

Fixing tree - Case 1: Red Uncle: Recolored nodes

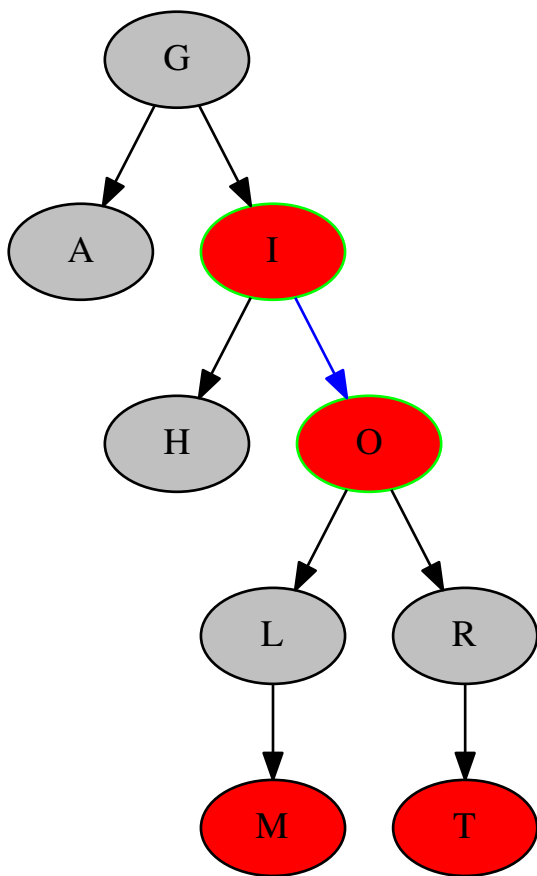


ALGORITHM
AGHILMORT

Fixing tree - Case 2: Black Uncle: Rotating tree

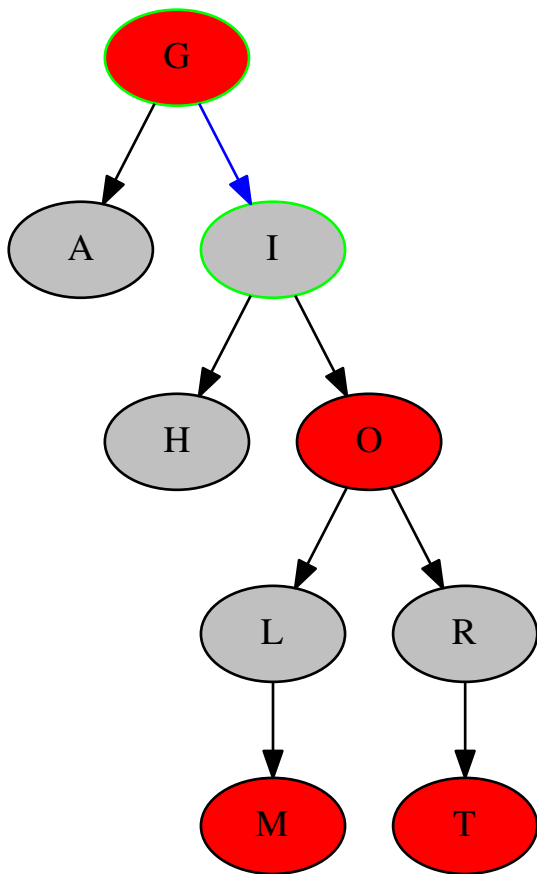


ALGORITHM
AGHILMORT
Performing right rotation



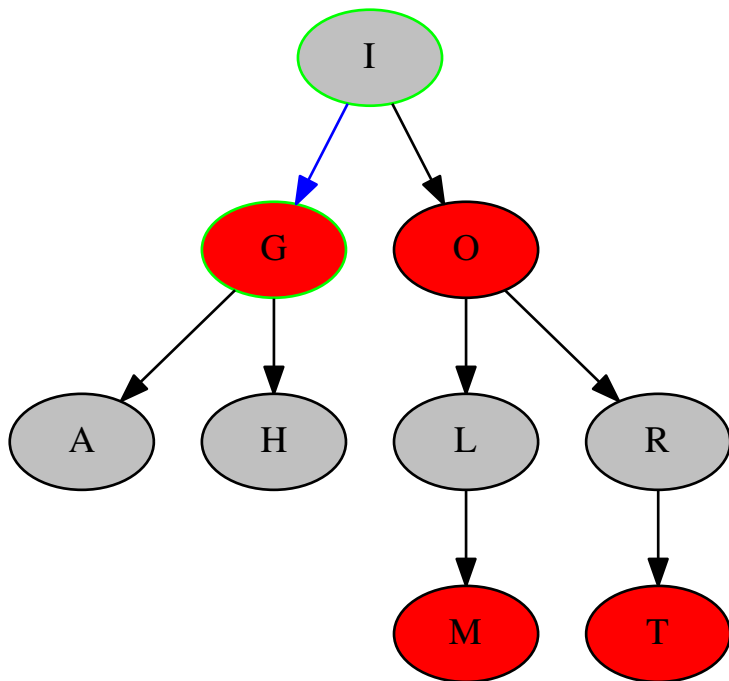
ALGORITHM
AGHILMORT

Performed right rotation

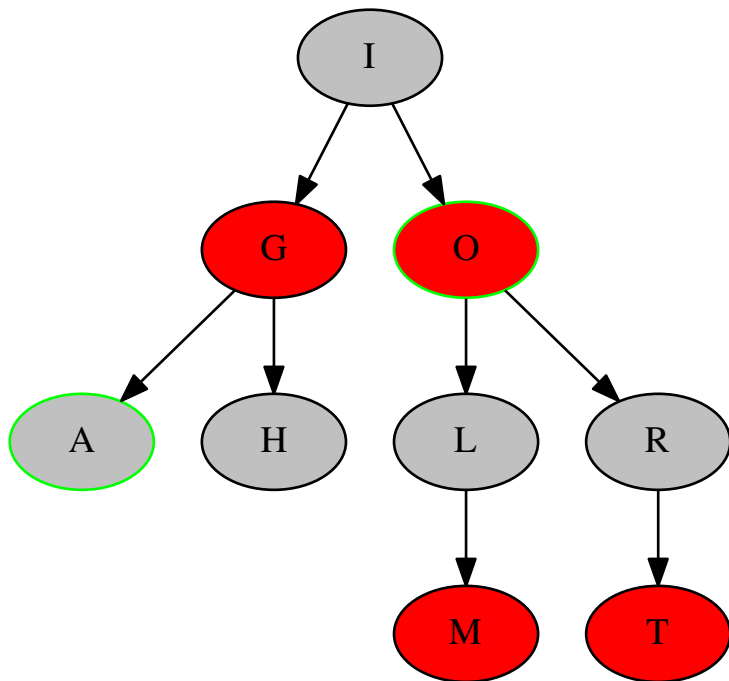


ALGORITHM
AGHILMORT

Performing left rotation

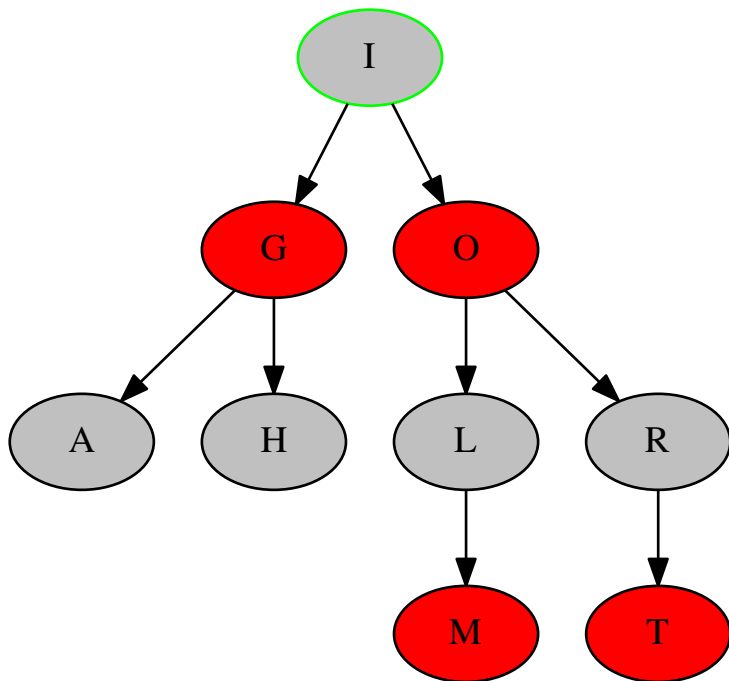


ALGORITHM
AGHILMORT
Performed left rotation



ALGORITHM
AGHILMORT

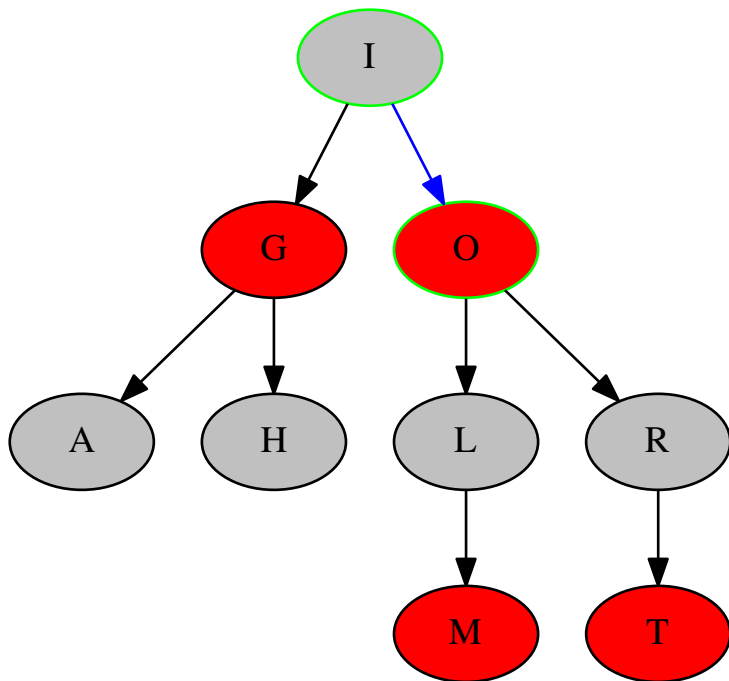
Fixing tree - Case 2: Black Uncle: Rotated tre



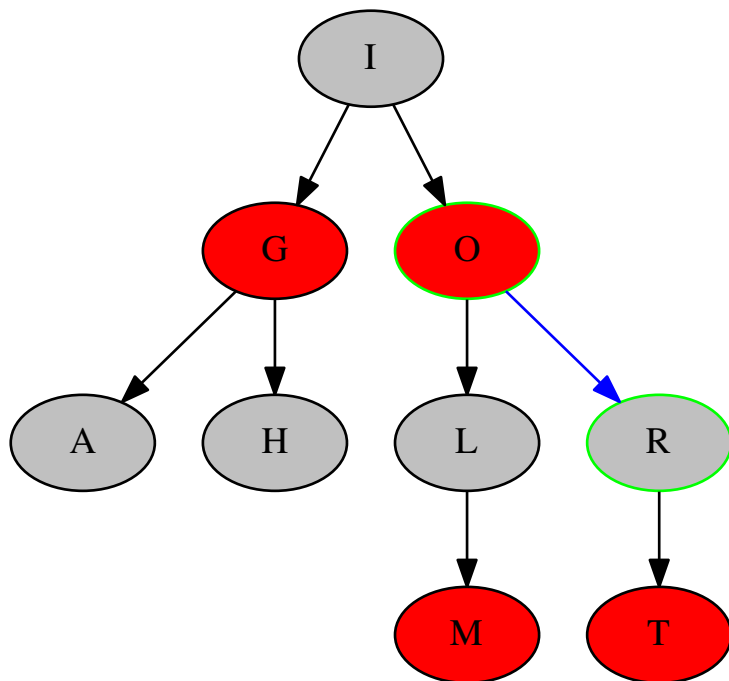
ALGORITHMS

AGHILMORT

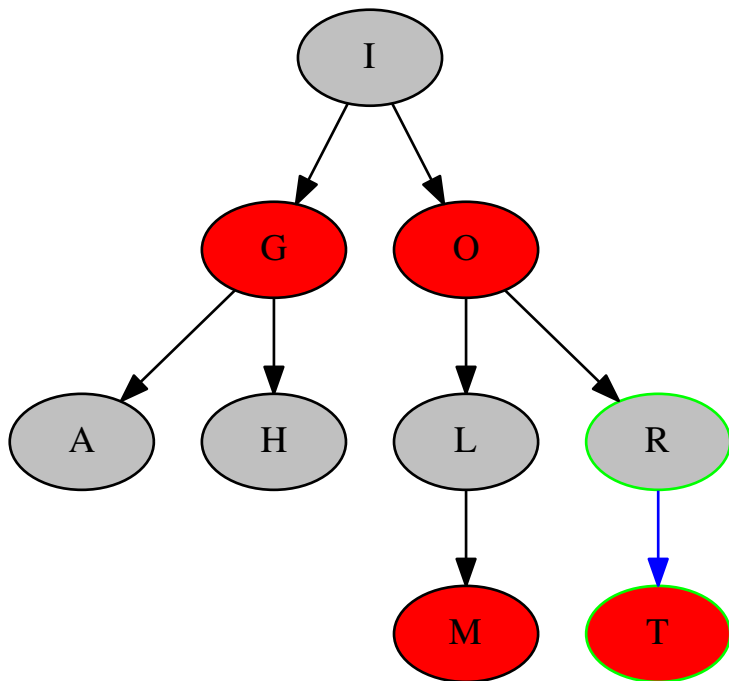
Looking for place to insert S



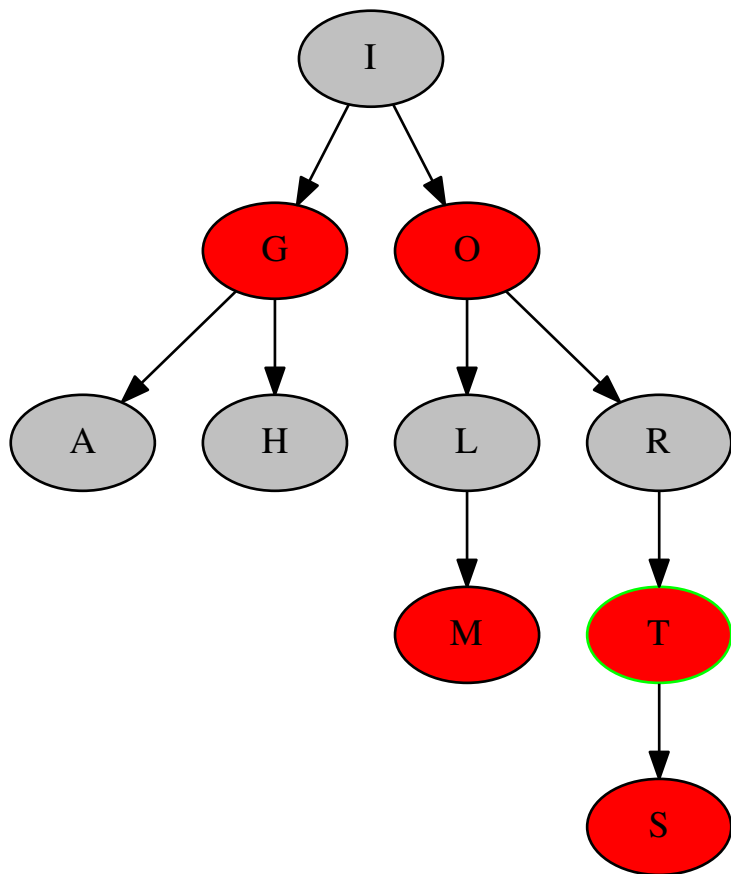
ALGORITHMS
AGHILMORT
Looking for place to insert S



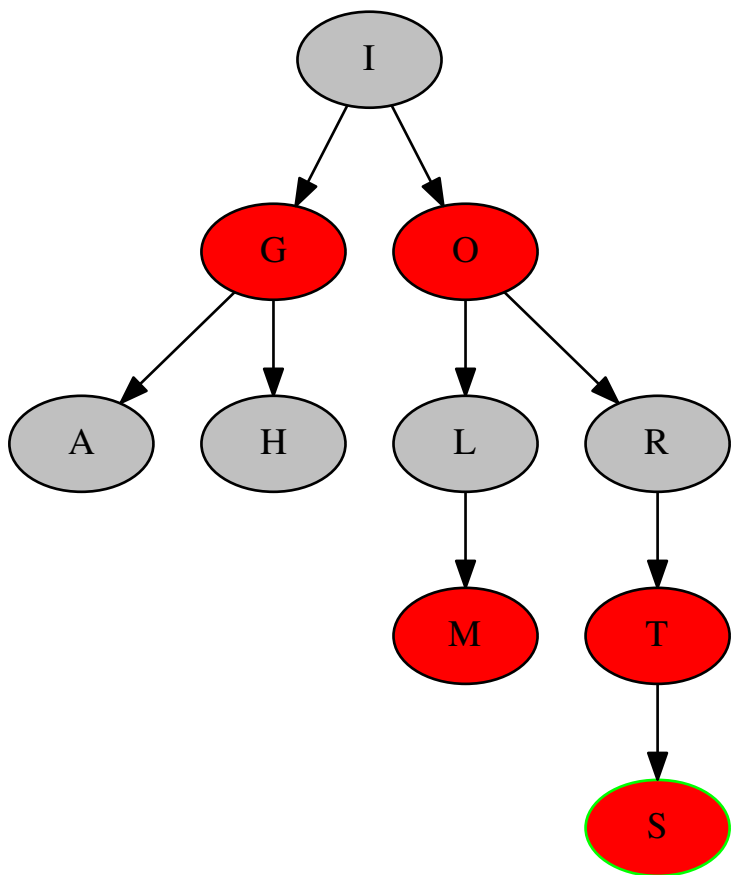
ALGORITHMS
AGHILMORT
Looking for place to insert S



ALGORITHMS
AGHILMORT
Looking for place to insert S

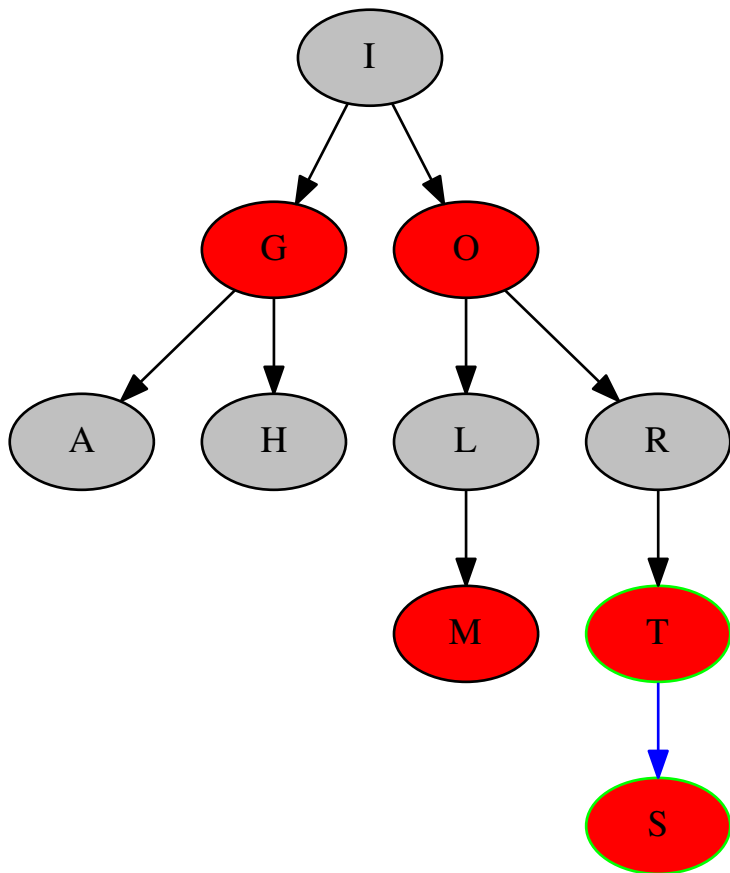


ALGORITHMS
AGHILMORST
Inserted S

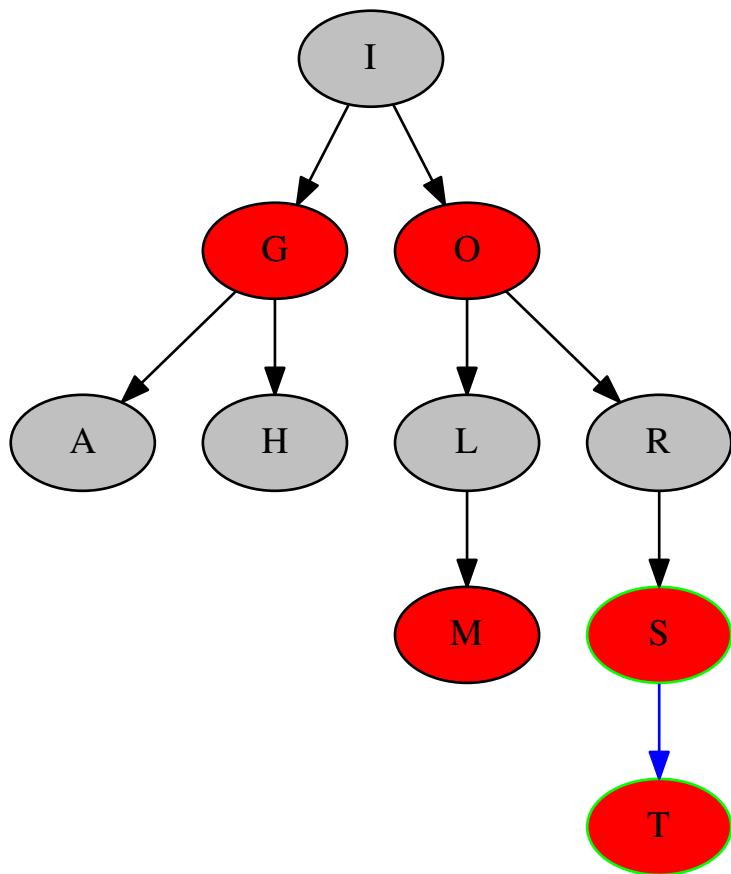


ALGORITHMS
AGHILMORST

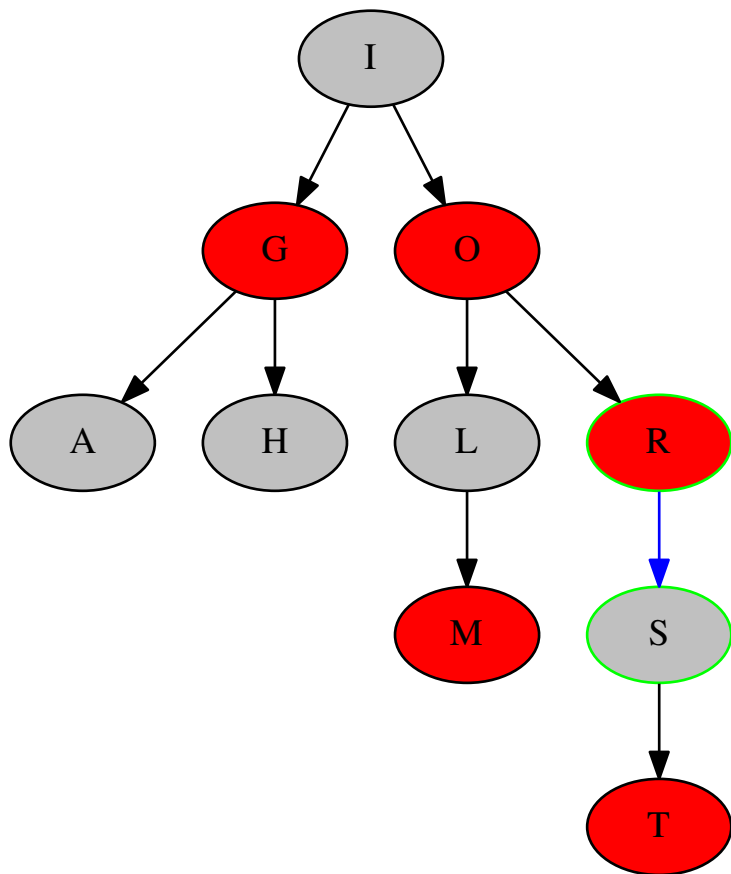
Fixing tree - Case 2: Black Uncle: Rotating tree



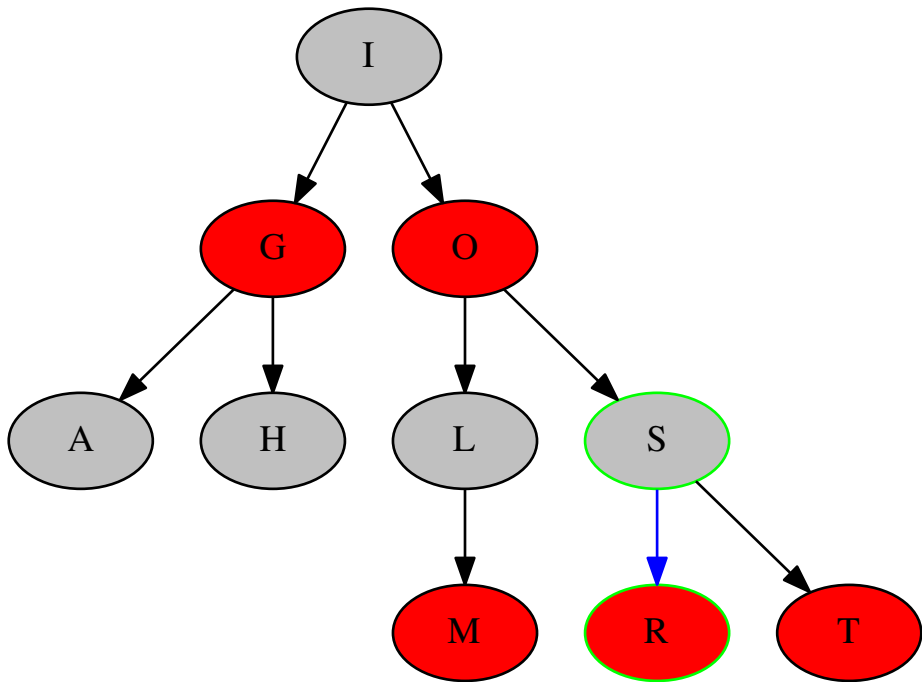
ALGORITHMS
AGHILMORST
Performing right rotation



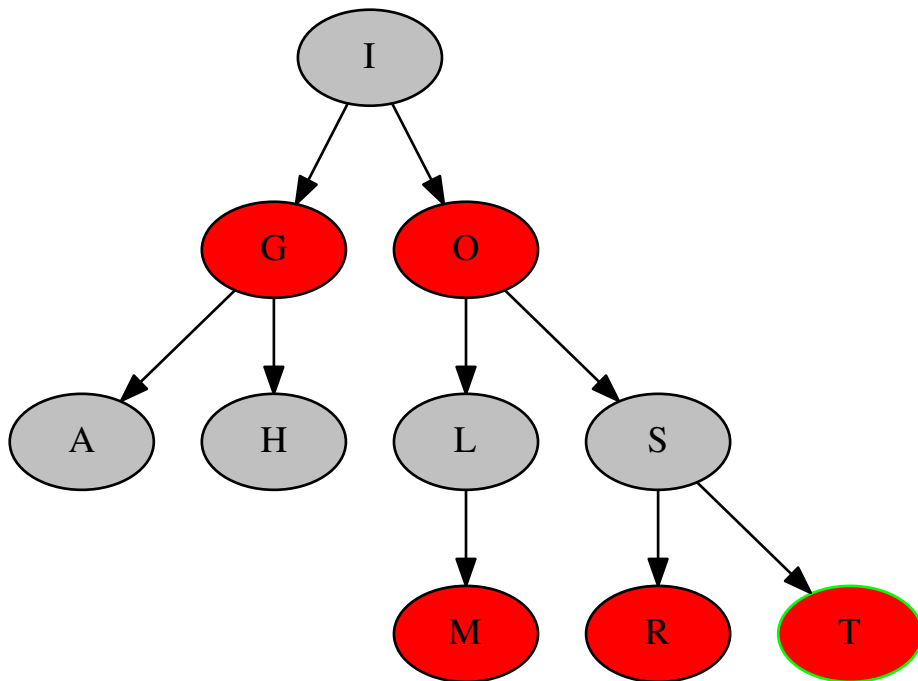
ALGORITHMS
AGHILMORST
Performed right rotation



ALGORITHMS
AGHILMORST
Performing left rotation



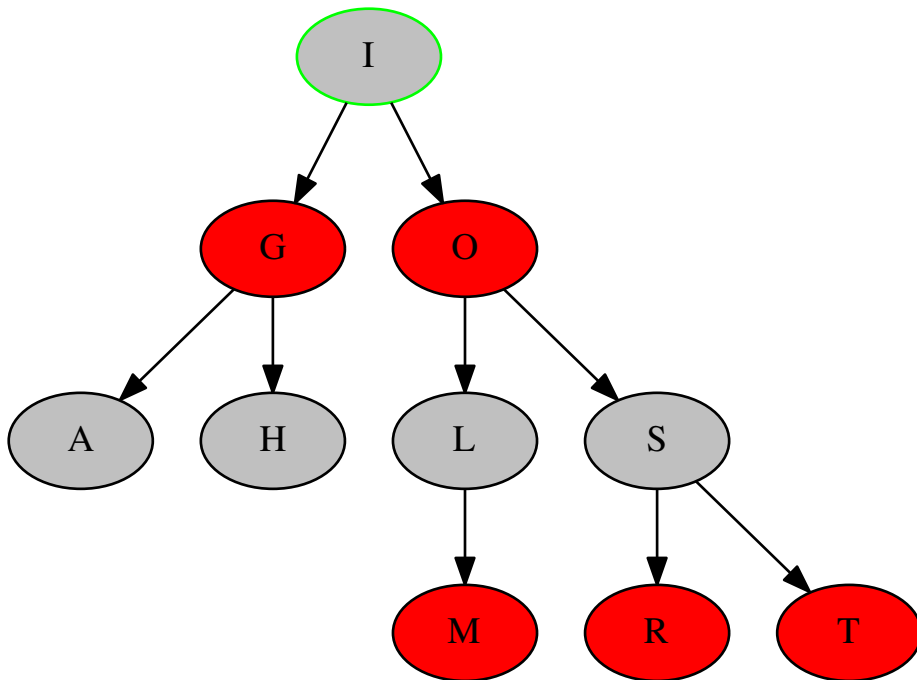
ALGORITHMS
AGHILMORST
Performed left rotation



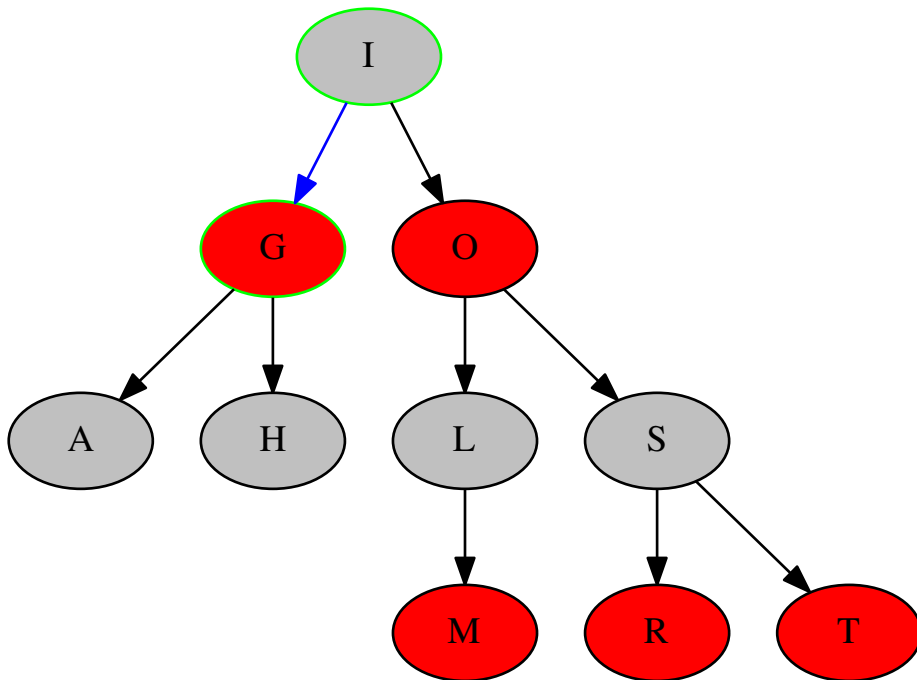
ALGORITHMS

AGHILMORST

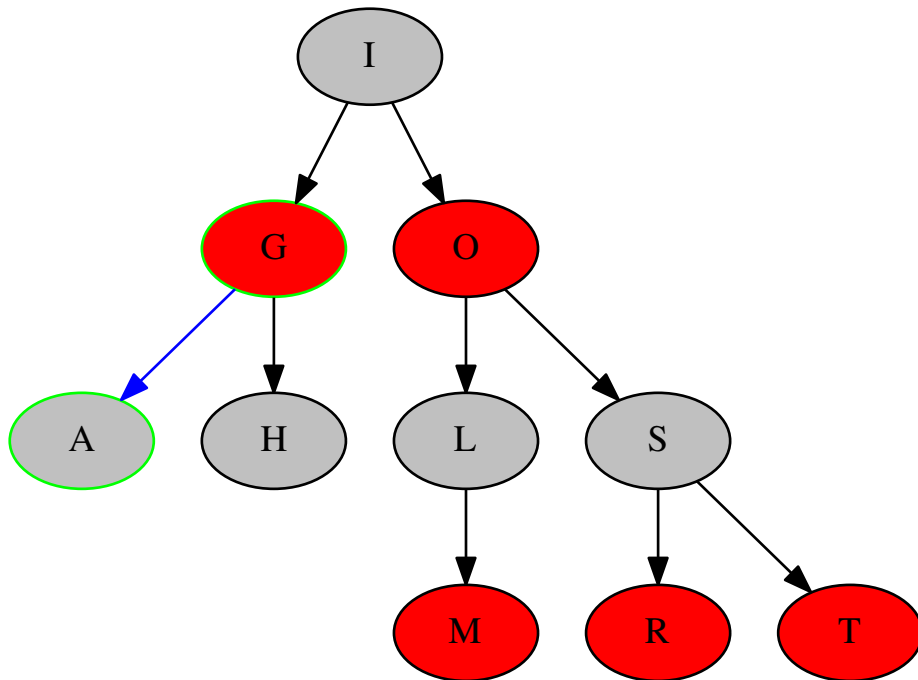
Fixing tree - Case 2: Black Uncle: Rotated tre



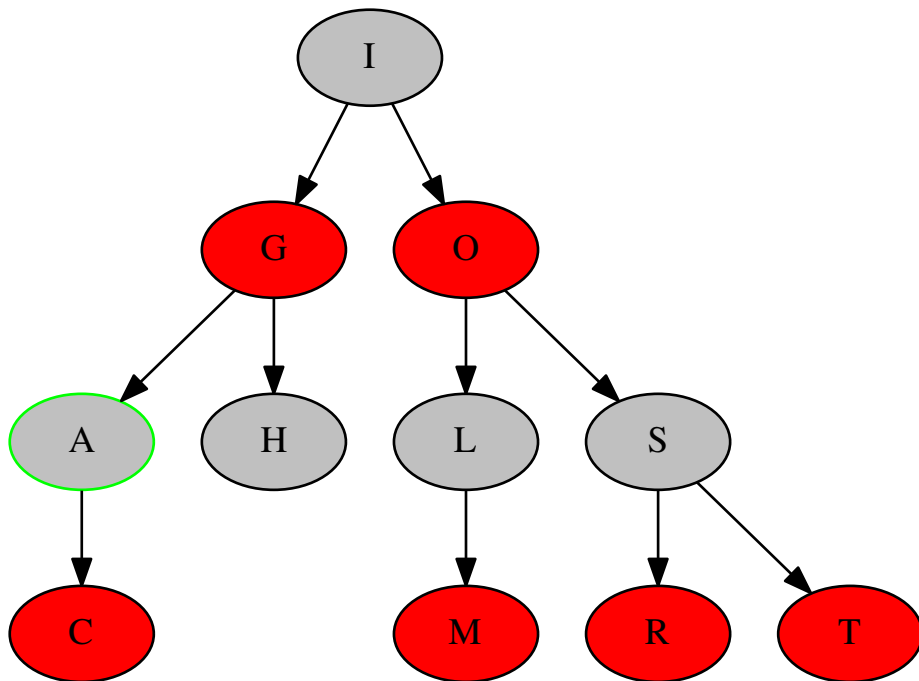
ALGORITHMS C
AGHILMORST
Looking for place to insert C



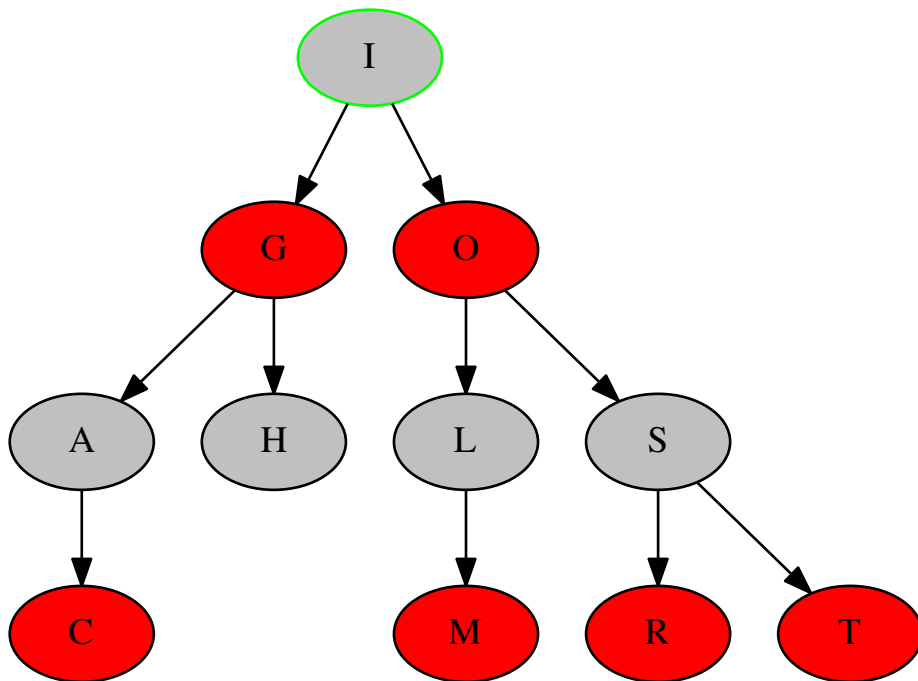
ALGORITHMS C
AGHILMORST
Looking for place to insert C



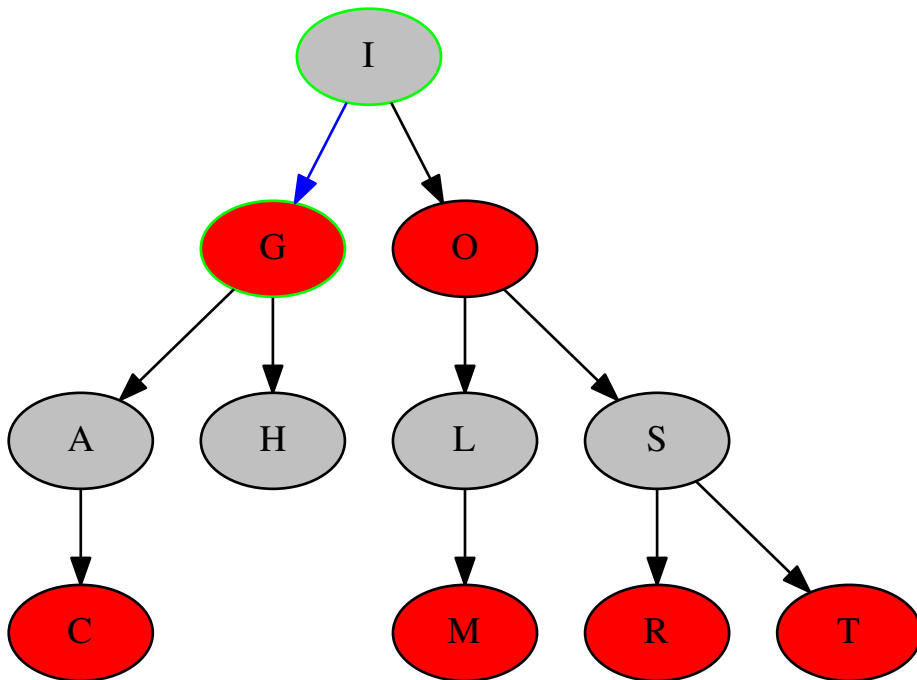
ALGORITHMS C
AGHILMORST
Looking for place to insert C



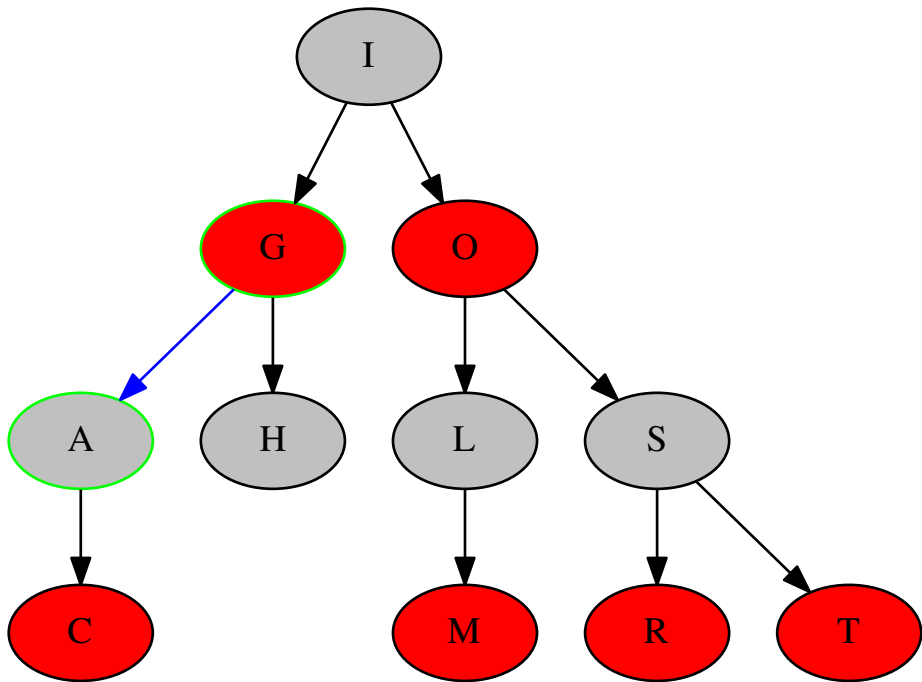
ALGORITHMS C
ACGHILMORST
Inserted C



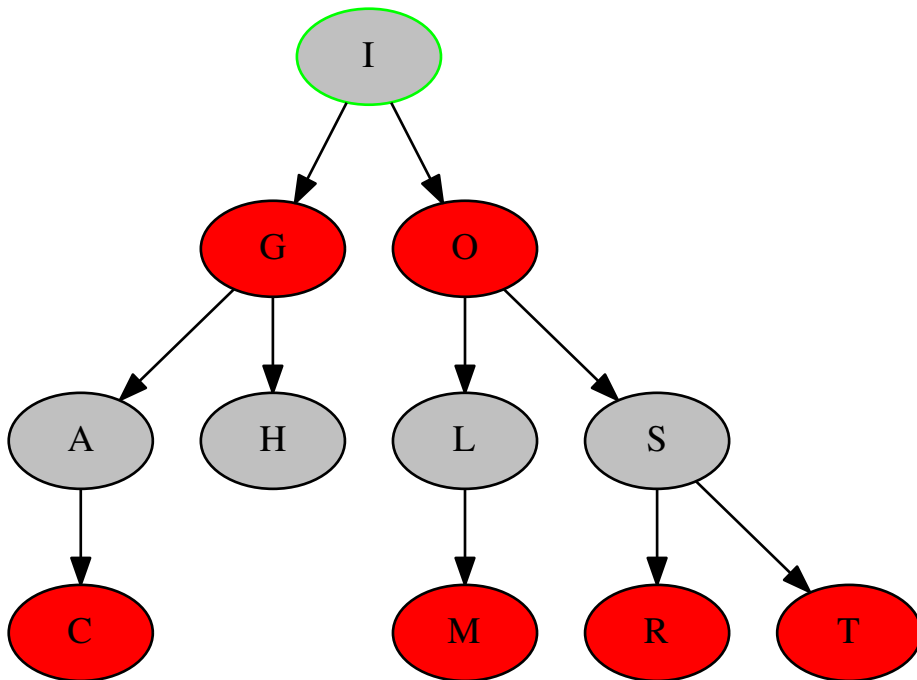
ALGORITHMS CA
ACGHILMORST
Looking for place to insert A



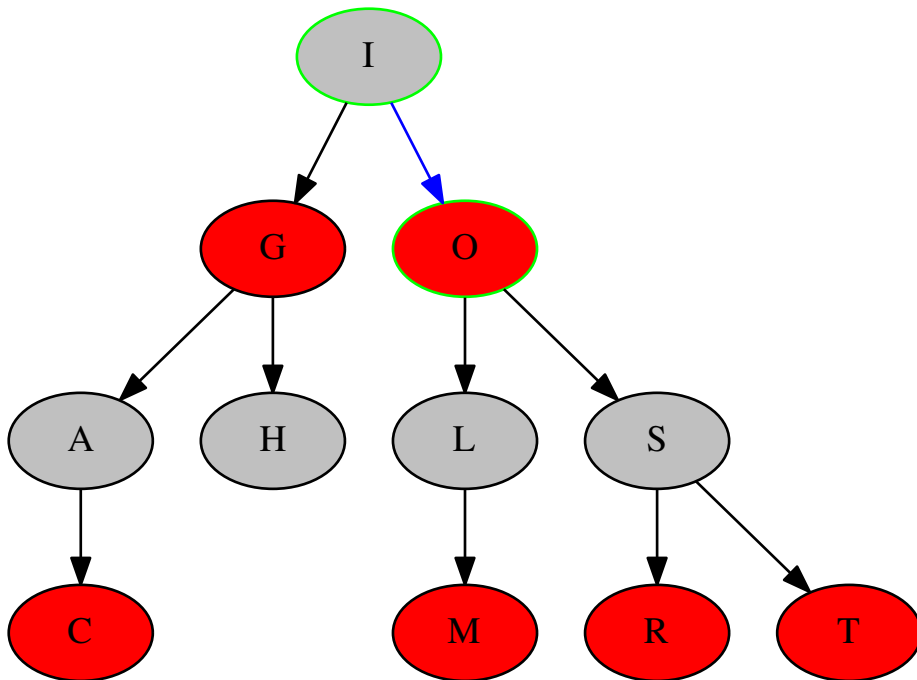
ALGORITHMS CA
ACGHILMORST
Looking for place to insert A



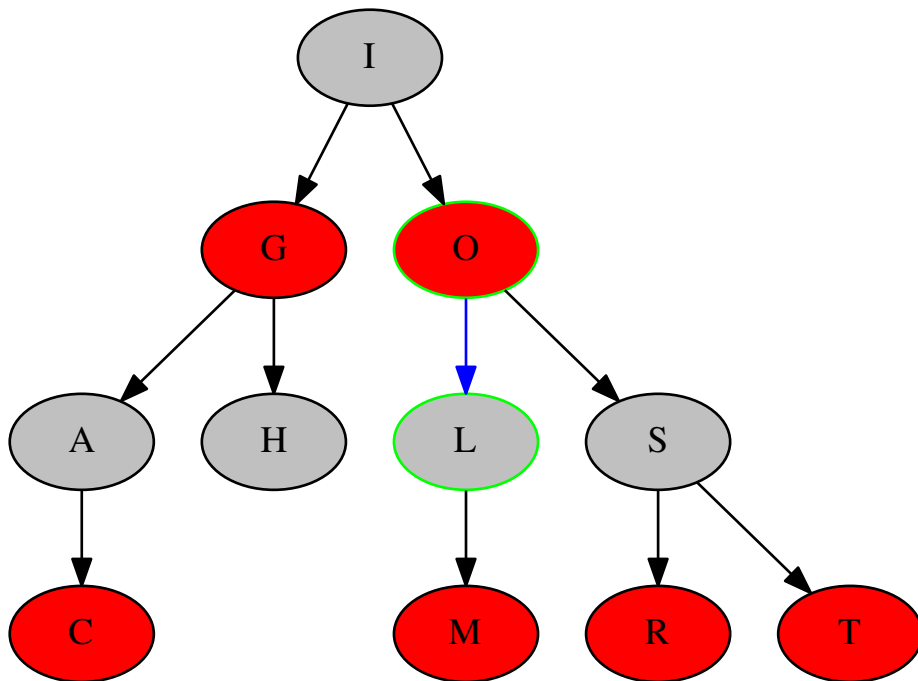
ALGORITHMS CA
ACGHILMORST
Looking for place to insert A



ALGORITHMS CAM
ACGHILMORST
Looking for place to insert M



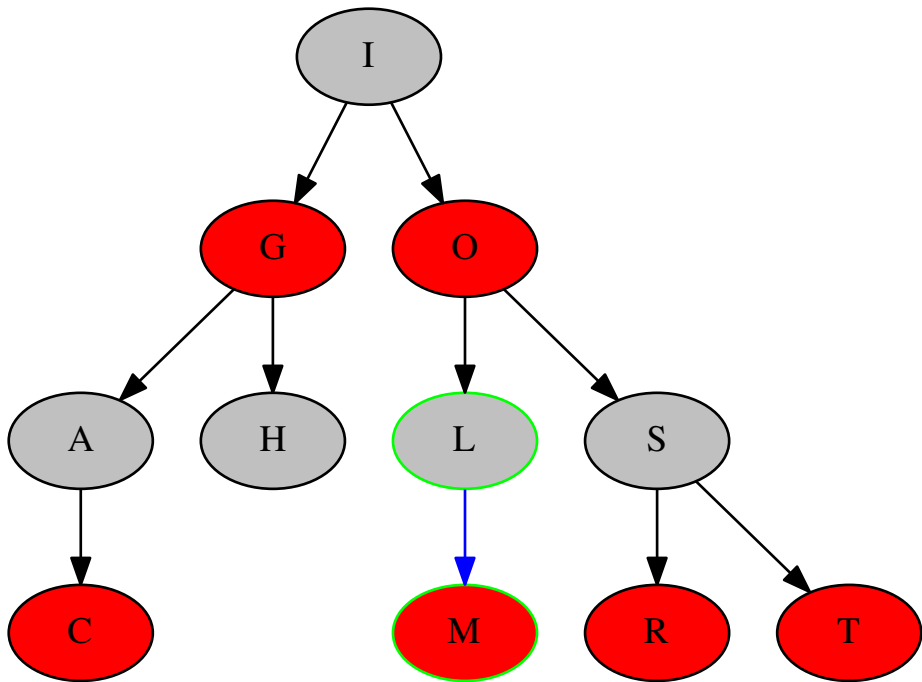
ALGORITHMS CAM
ACGHILMORST
Looking for place to insert M



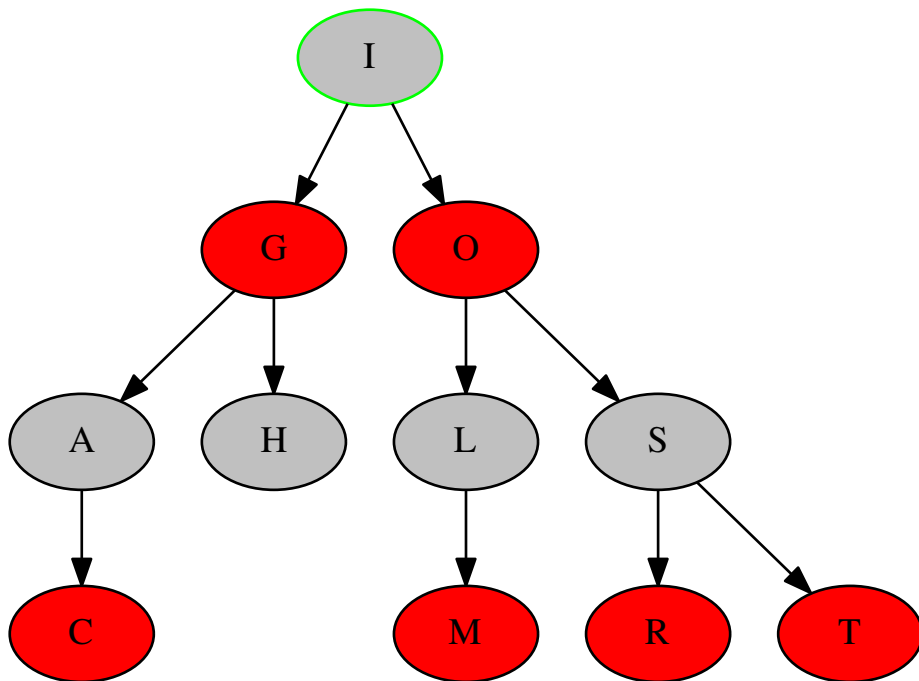
ALGORITHMS CAM

ACGHILMORST

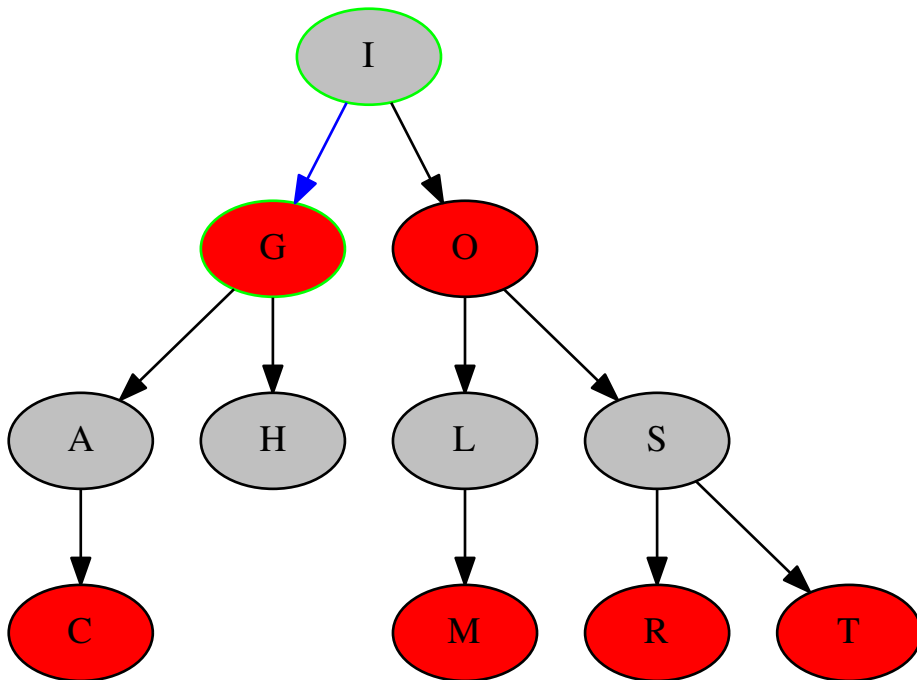
Looking for place to insert M



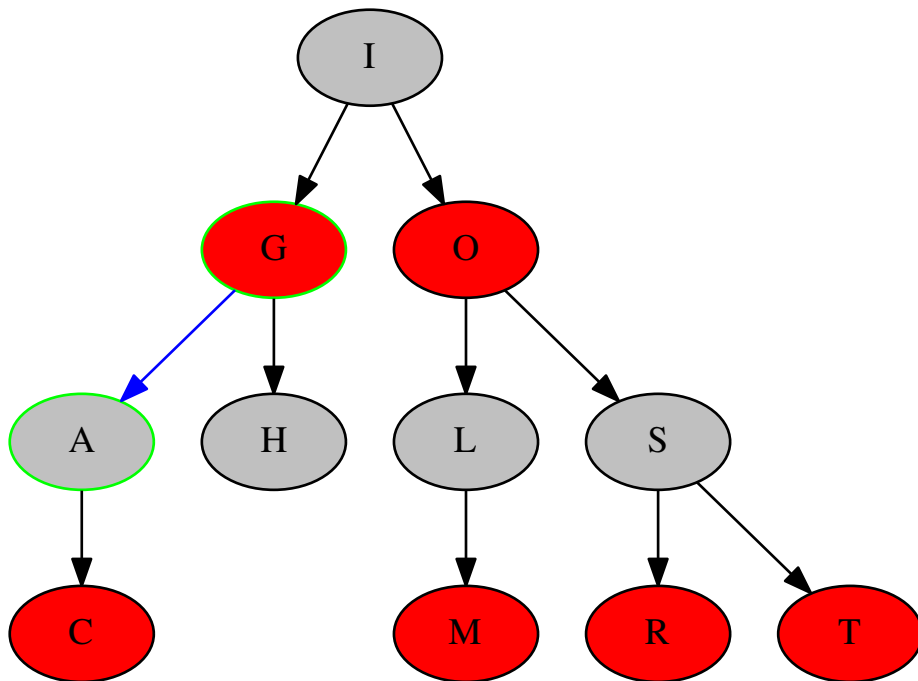
ALGORITHMS CAM
ACGHILMORST
Looking for place to insert M



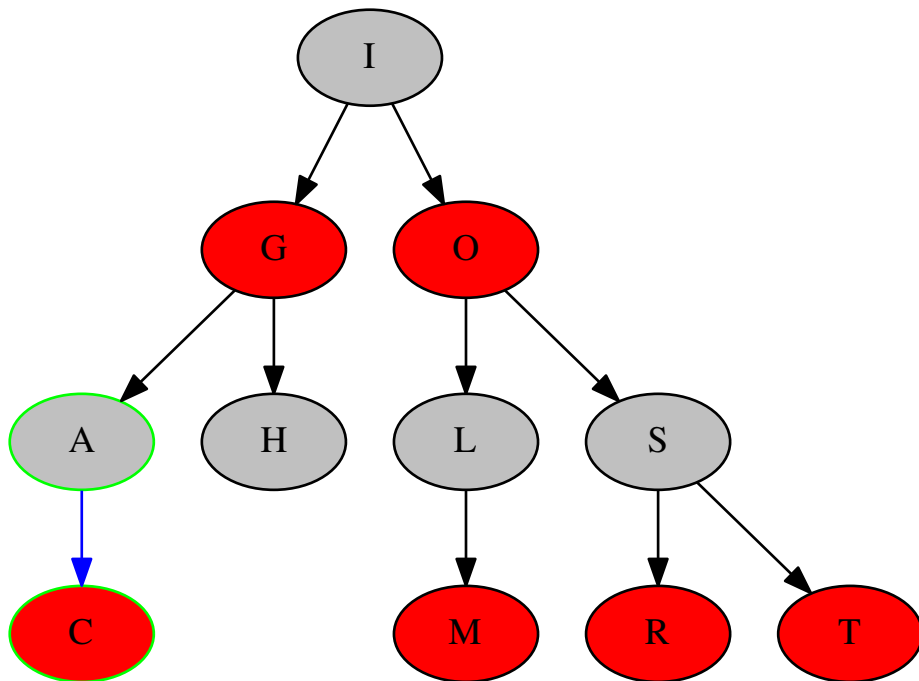
ALGORITHMS CAMB
ACGHILMORST
Looking for place to insert B



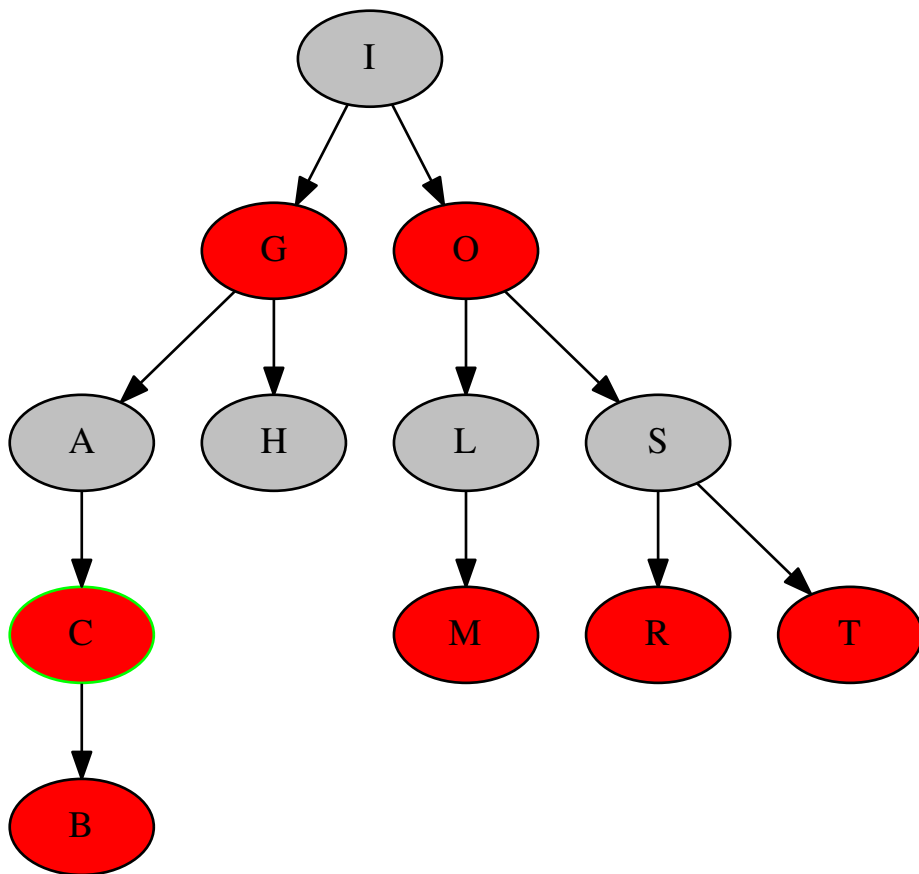
ALGORITHMS CAMB
ACGHILMORST
Looking for place to insert B



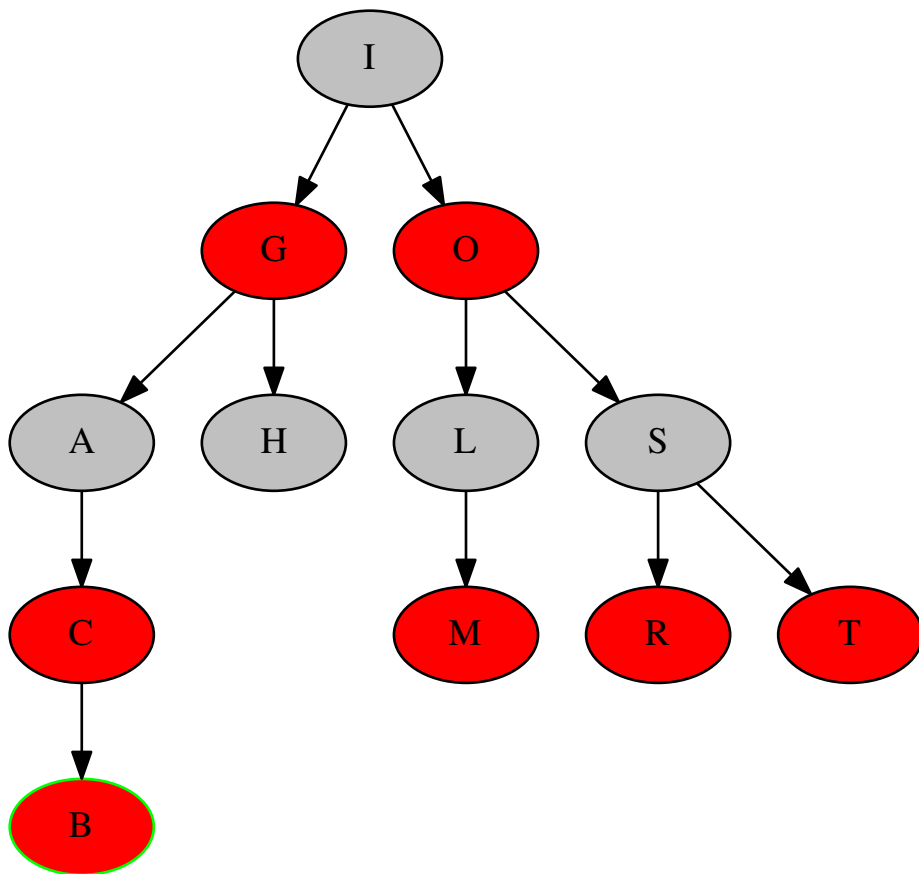
ALGORITHMS CAMB
ACGHILMORST
Looking for place to insert B



ALGORITHMS CAMB
ACGHILMORST
Looking for place to insert B

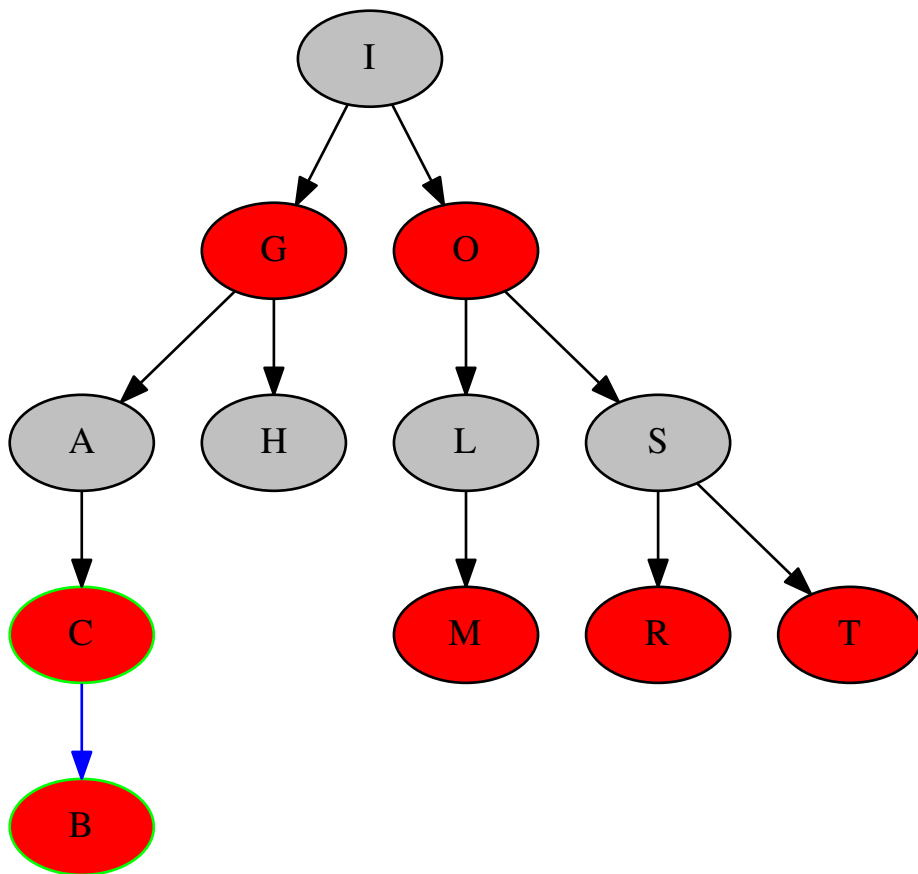


ALGORITHMS CAMB
ABCGHILMORST
Inserted B

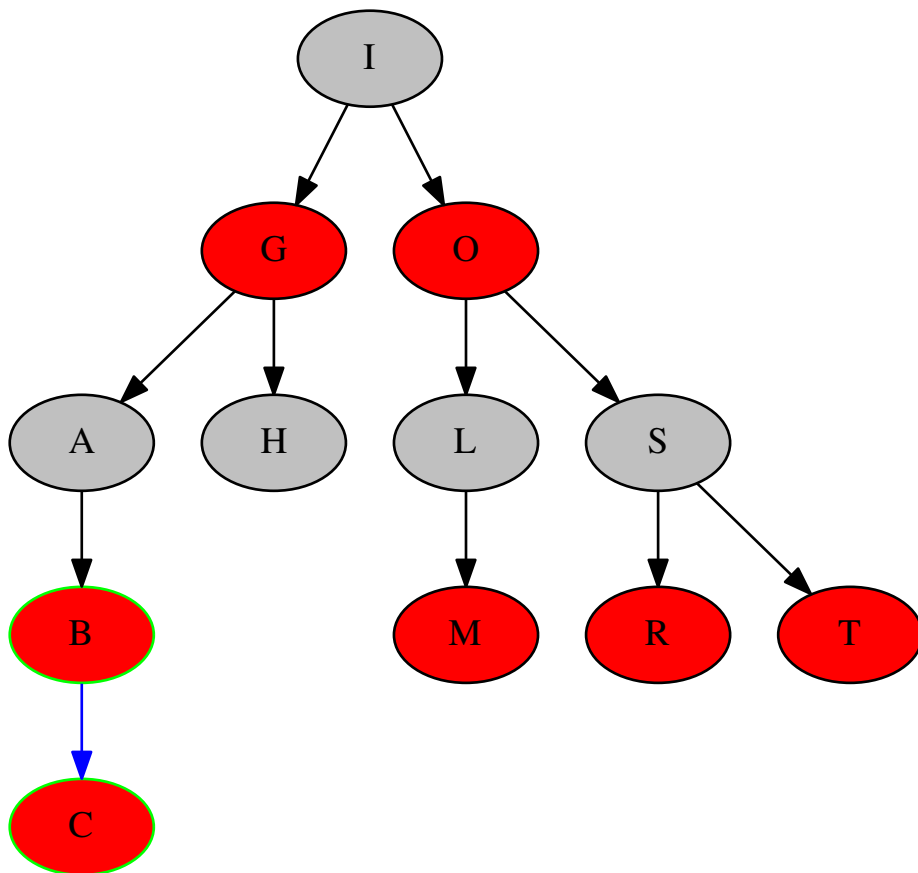


ALGORITHMS CAMB
ABCGHILMORST

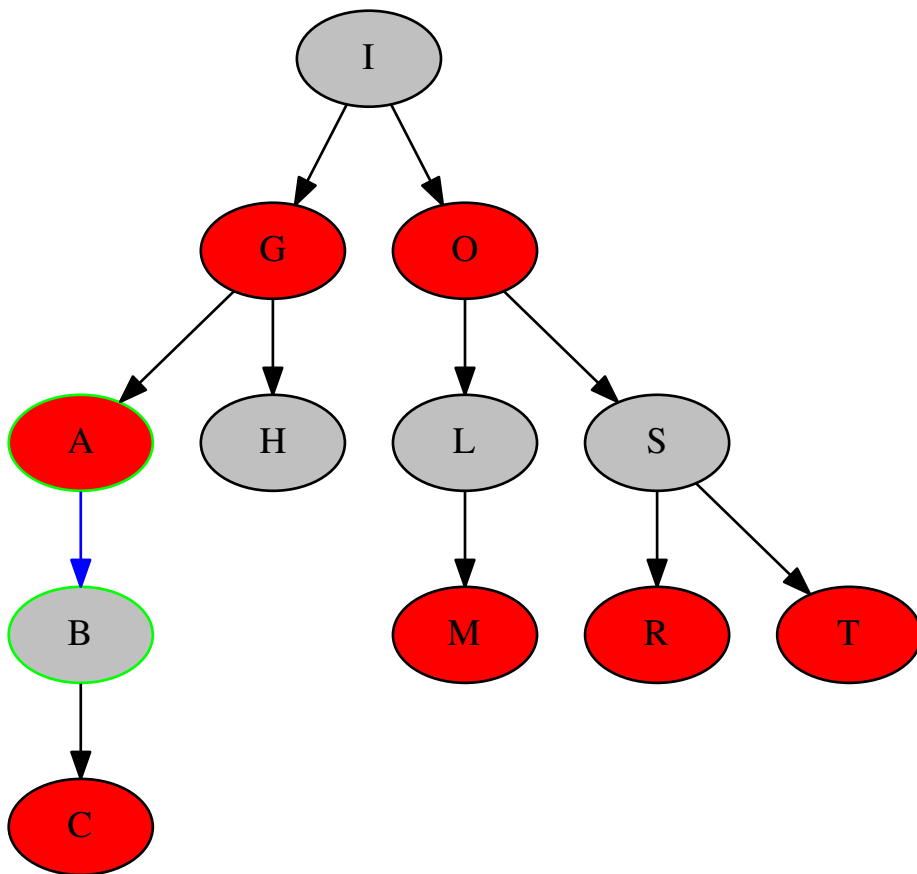
Fixing tree - Case 2: Black Uncle: Rotating tree



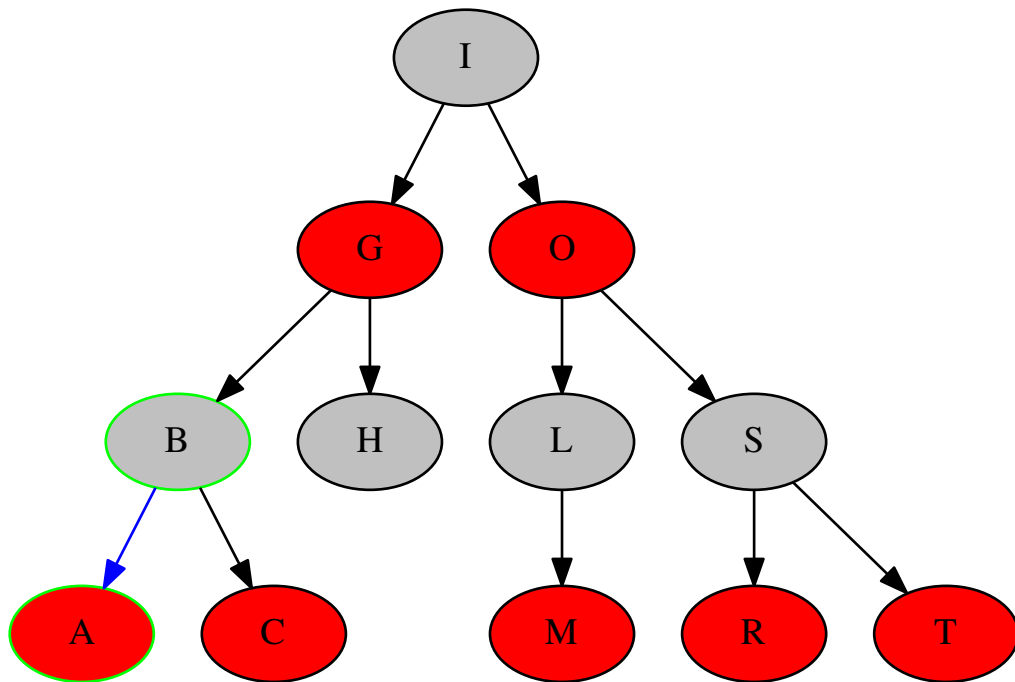
ALGORITHMS CAMB
ABCGHILMORST
Performing right rotation



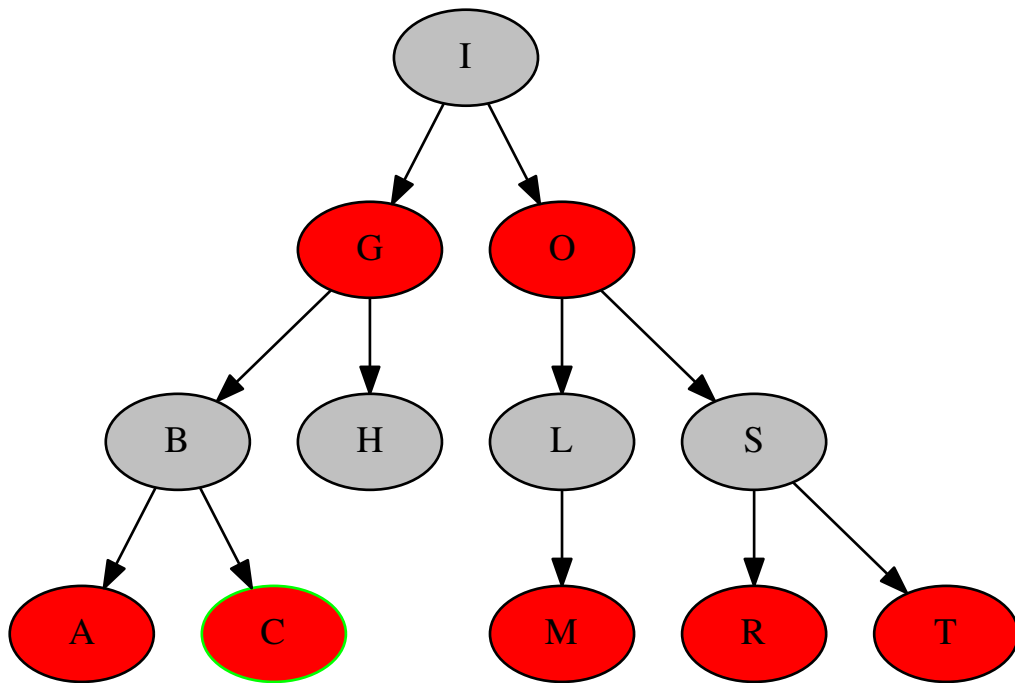
ALGORITHMS CAMB
ABCGHILMORST
Performed right rotation



ALGORITHMS CAMB
ABCGHILMORST
Performing left rotation



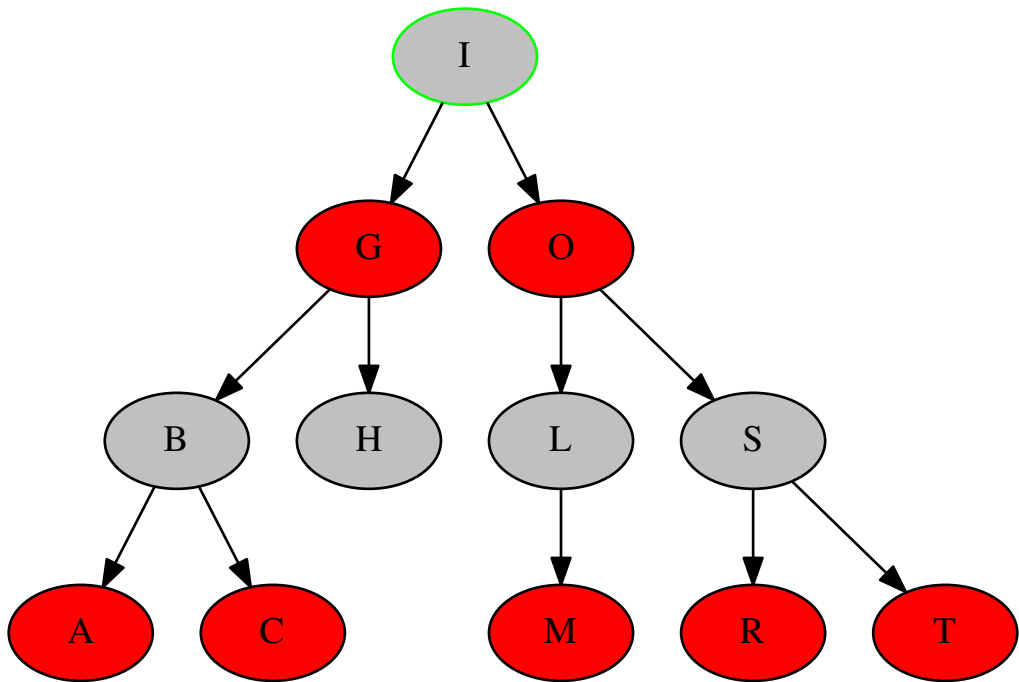
ALGORITHMS CAMB
ABCGHILMORST
Performed left rotation



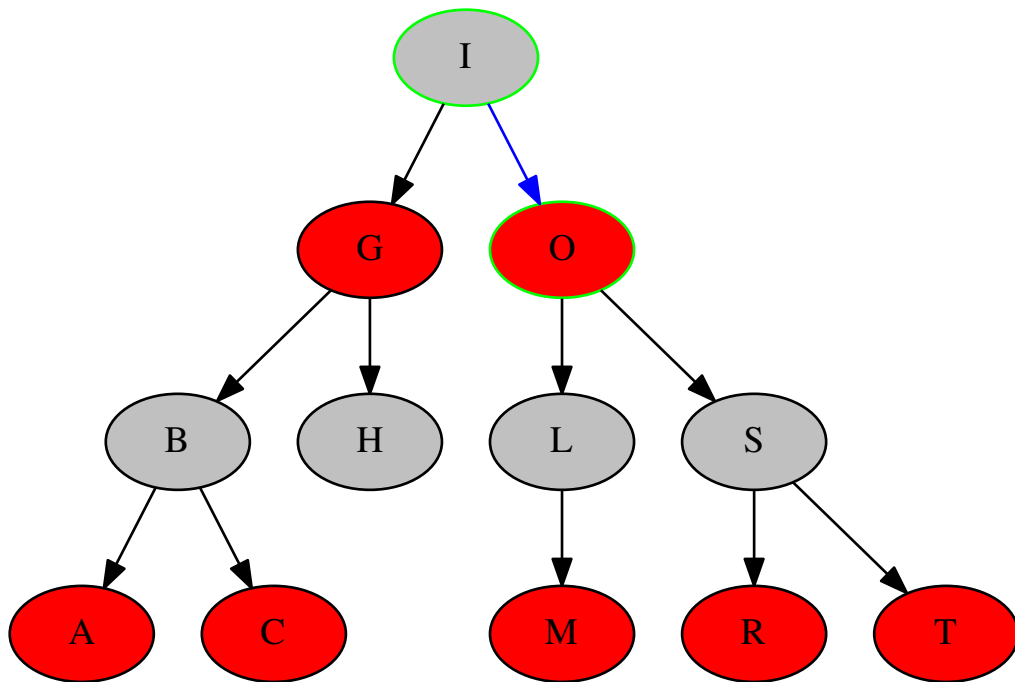
ALGORITHMS CAMB

ABCGHILMORST

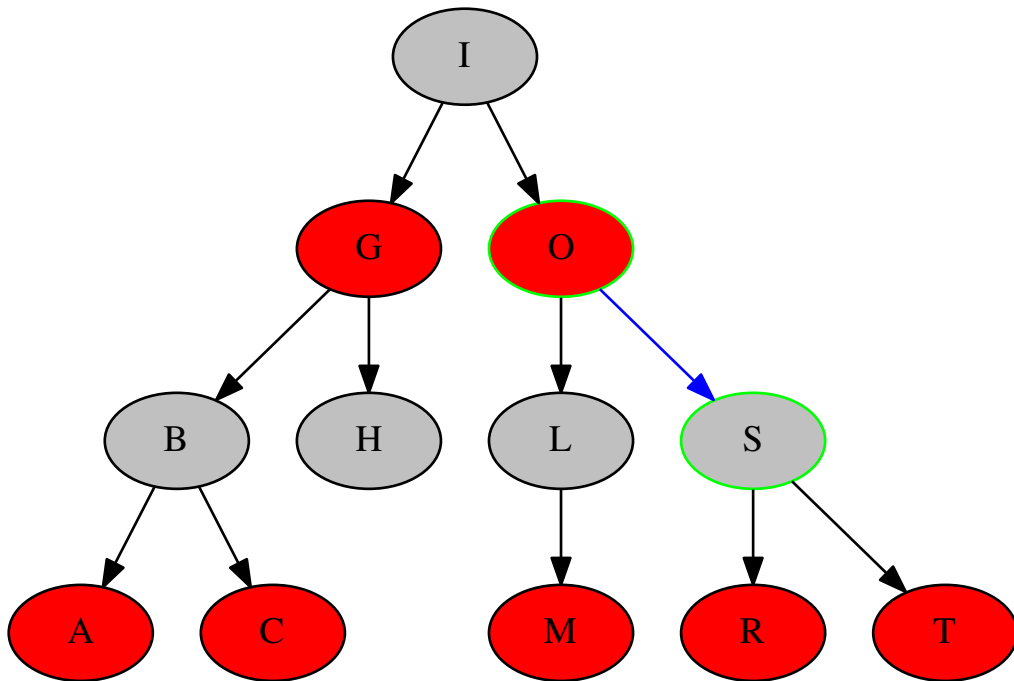
Fixing tree - Case 2: Black Uncle: Rotated tre



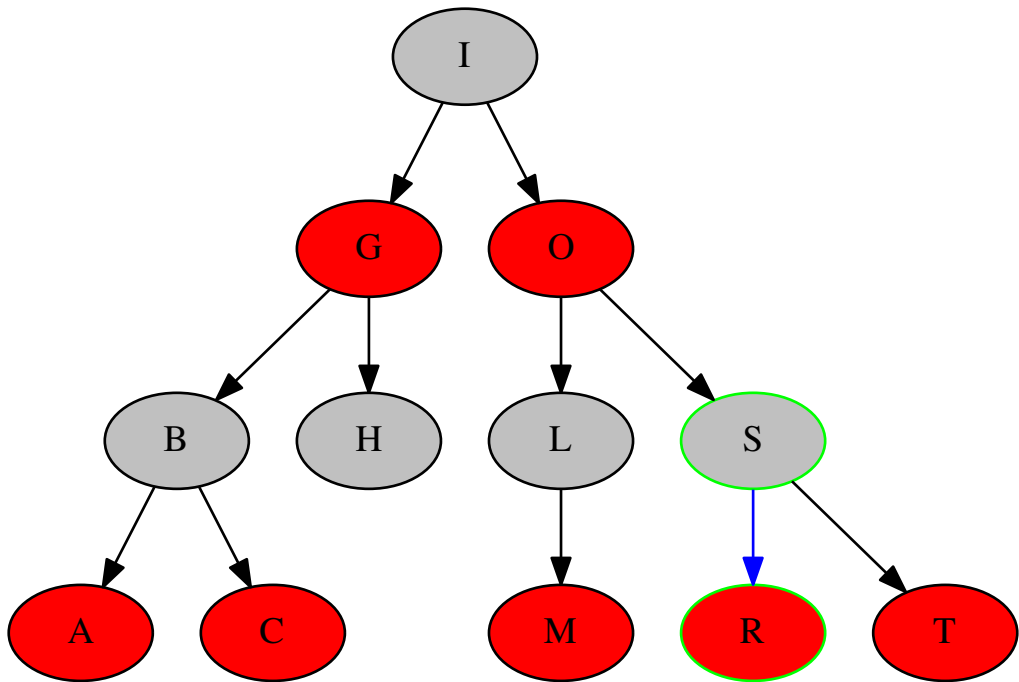
ALGORITHMS CAMBR
ABCGHILMORST
Looking for place to insert R



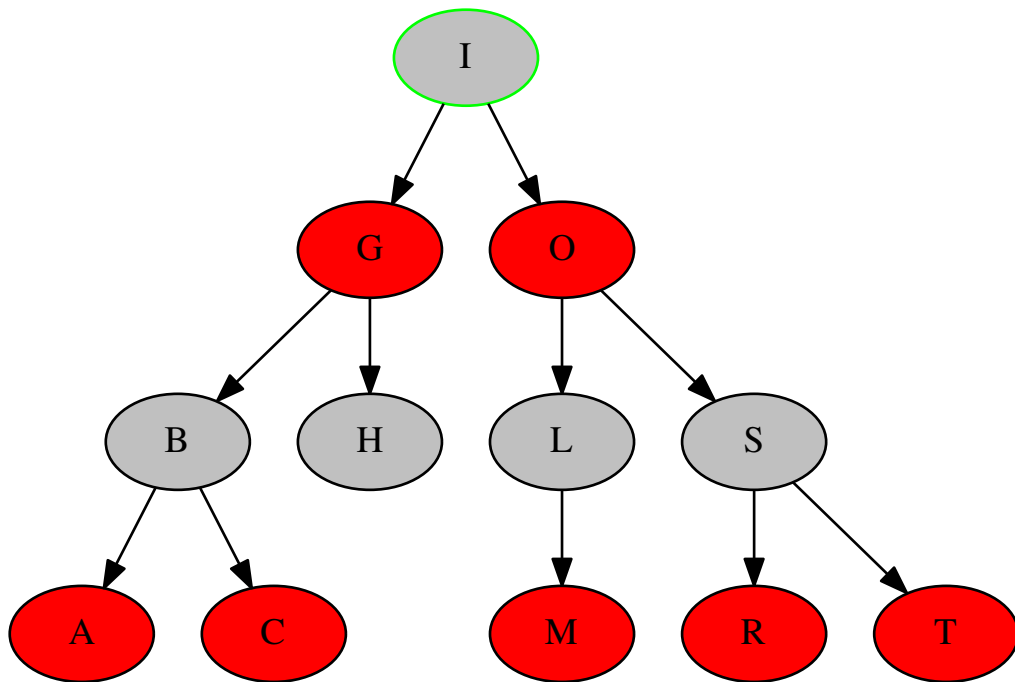
ALGORITHMS CAMBR
ABCGHILMORST
Looking for place to insert R



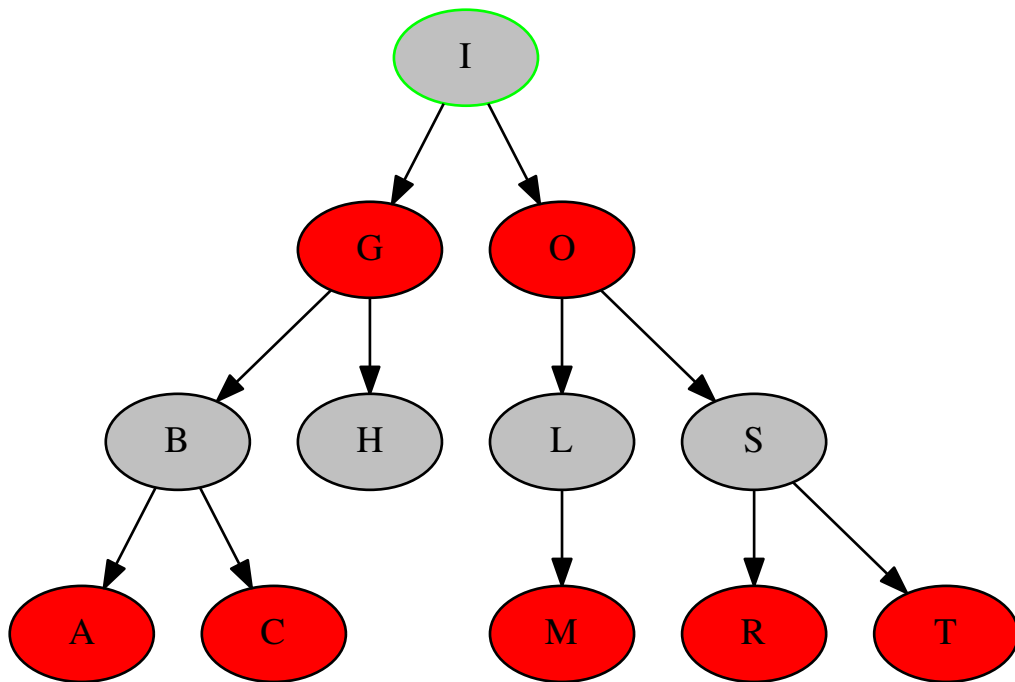
ALGORITHMS CAMBR
ABCGHILMORST
Looking for place to insert R



ALGORITHMS CAMBR
ABCGHILMORST
Looking for place to insert R



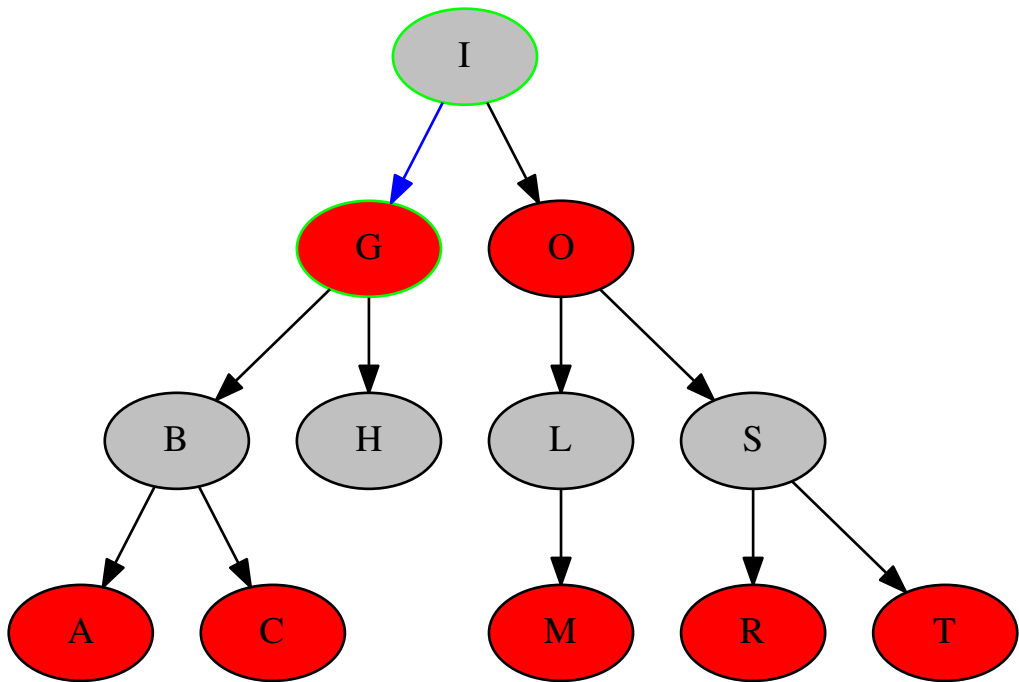
ALGORITHMS CAMBRI
ABCGHILMORST
Looking for place to insert I



ALGORITHMS CAMBRID

ABCGHILMORST

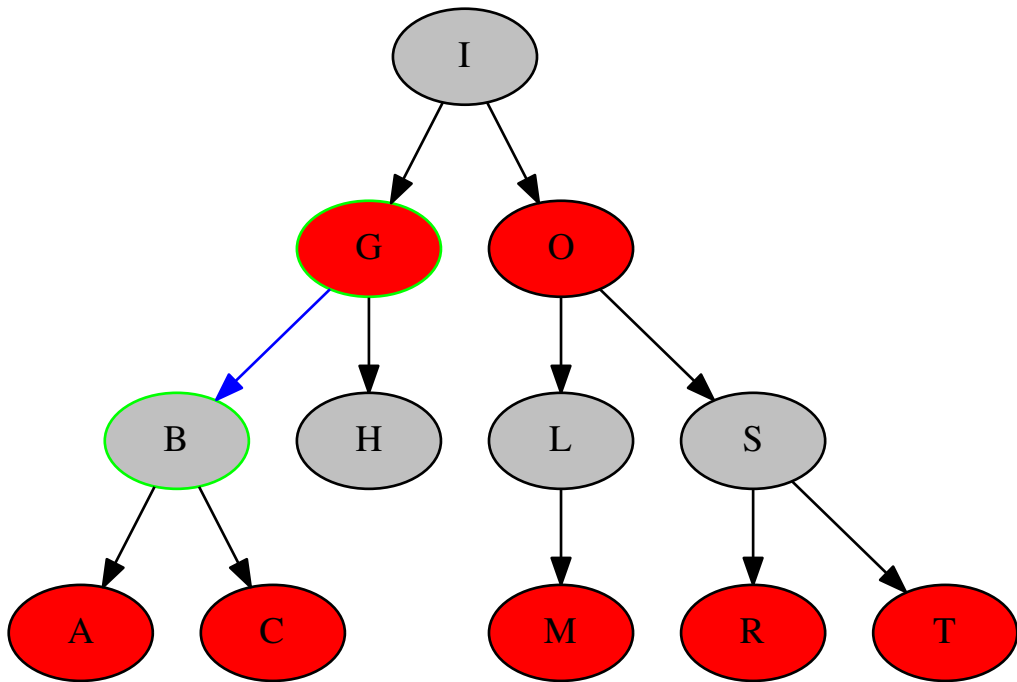
Looking for place to insert D



ALGORITHMS CAMBRID

ABCGHILMORST

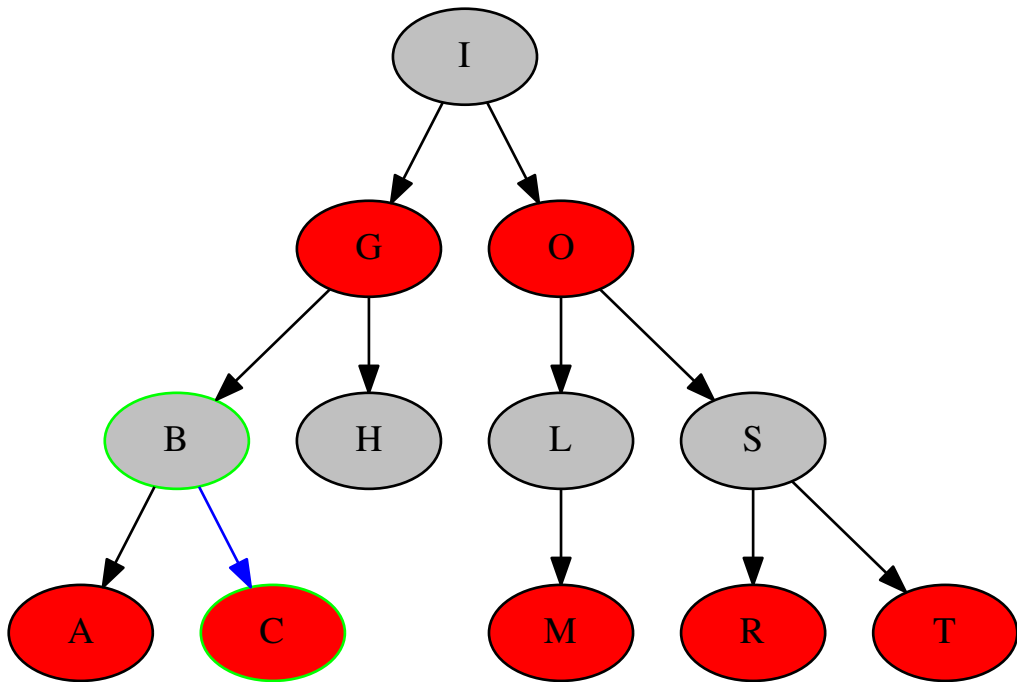
Looking for place to insert D



ALGORITHMS CAMBRID

ABCGHILMORST

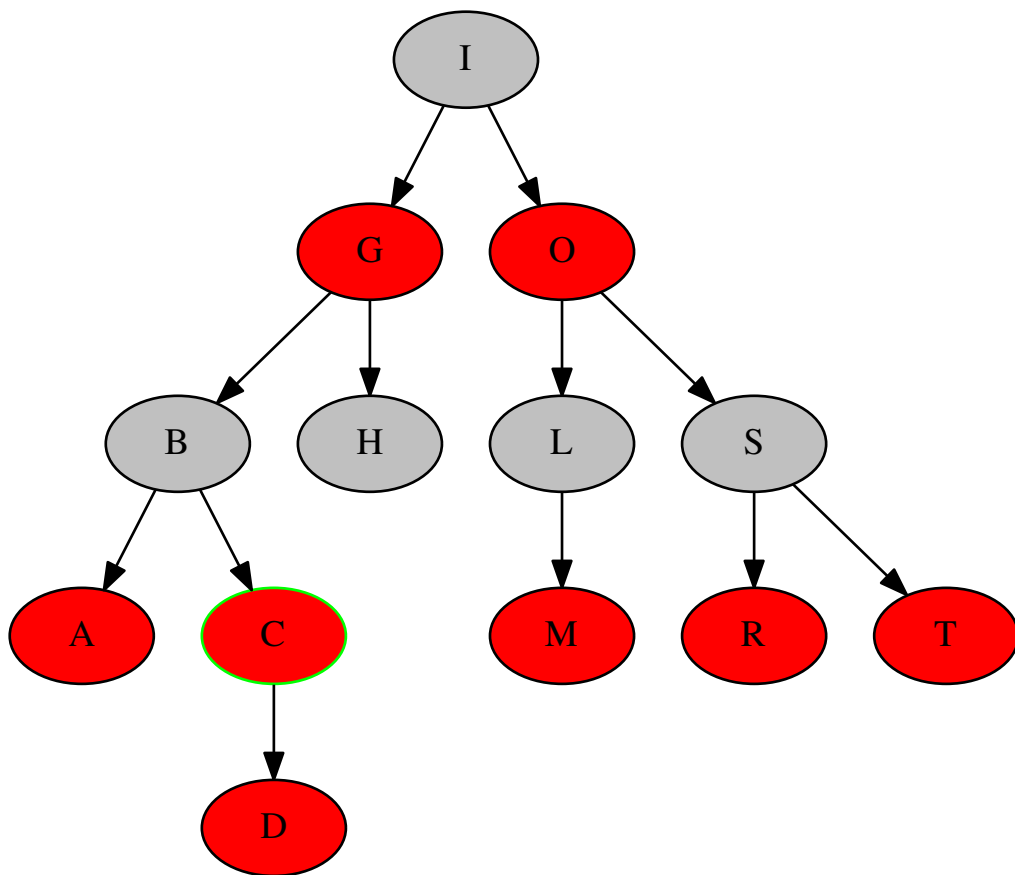
Looking for place to insert D



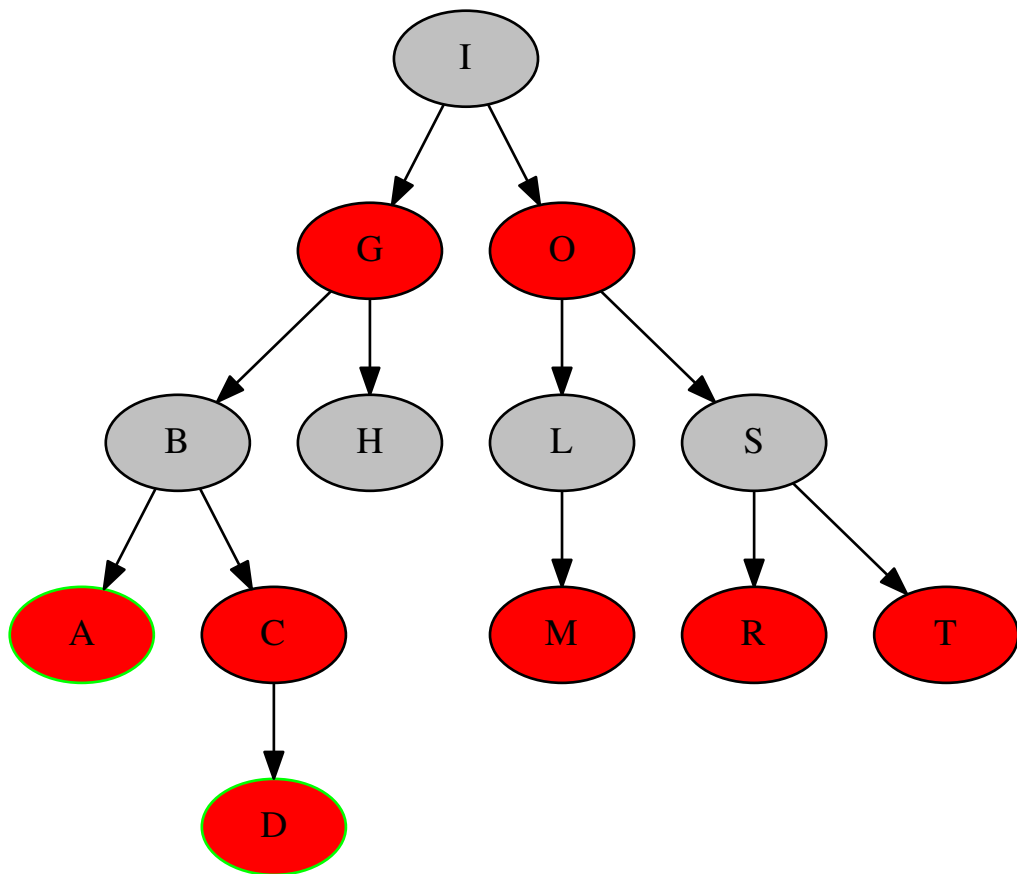
ALGORITHMS CAMBRID

ABCGHILMORST

Looking for place to insert D



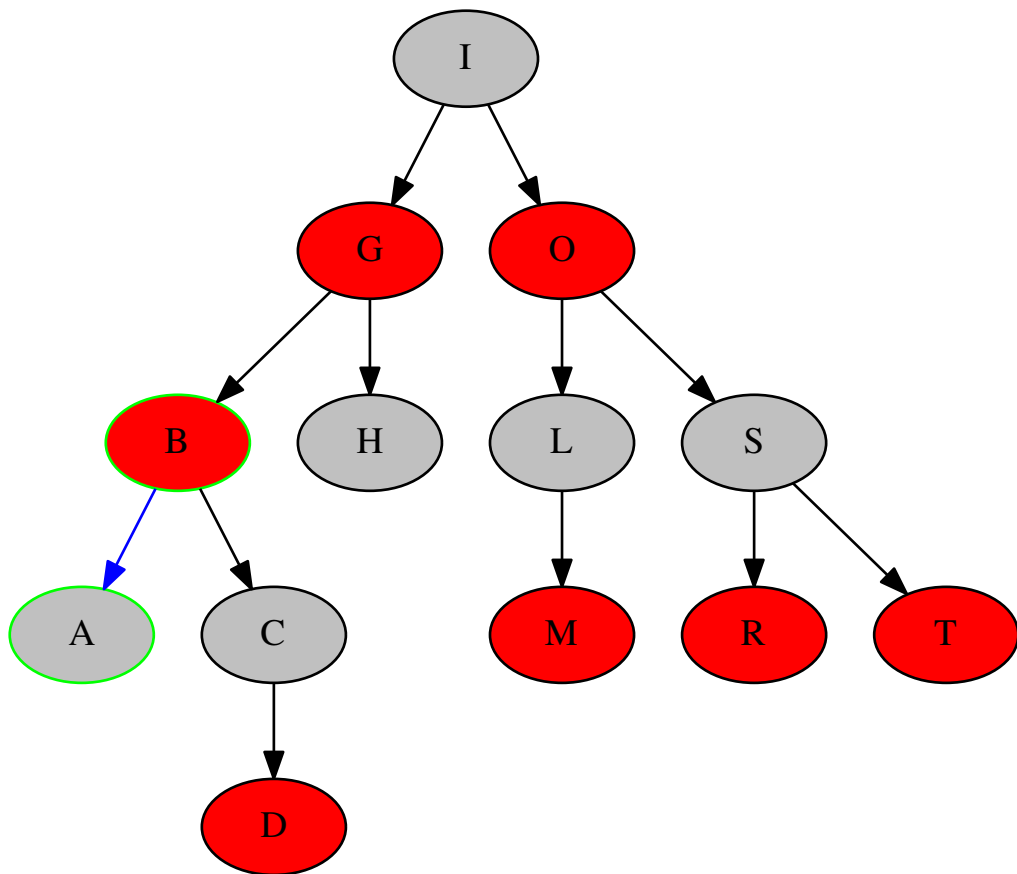
ALGORITHMS CAMBRID
ABCDGHILMORST
Inserted D



ALGORITHMS CAMBRID

ABCDGHILMORST

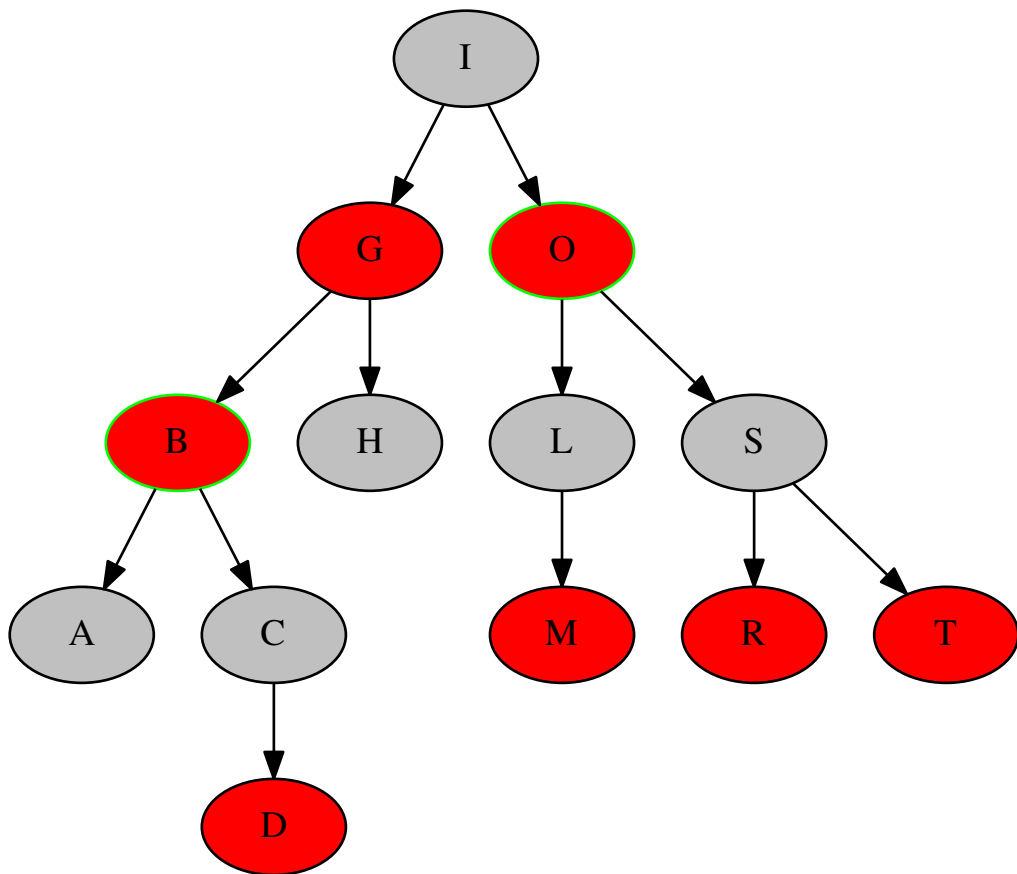
Fixing tree - Case 1: Red Uncle: Recoloring nodes



ALGORITHMS CAMBRID

ABCDGHILMORST

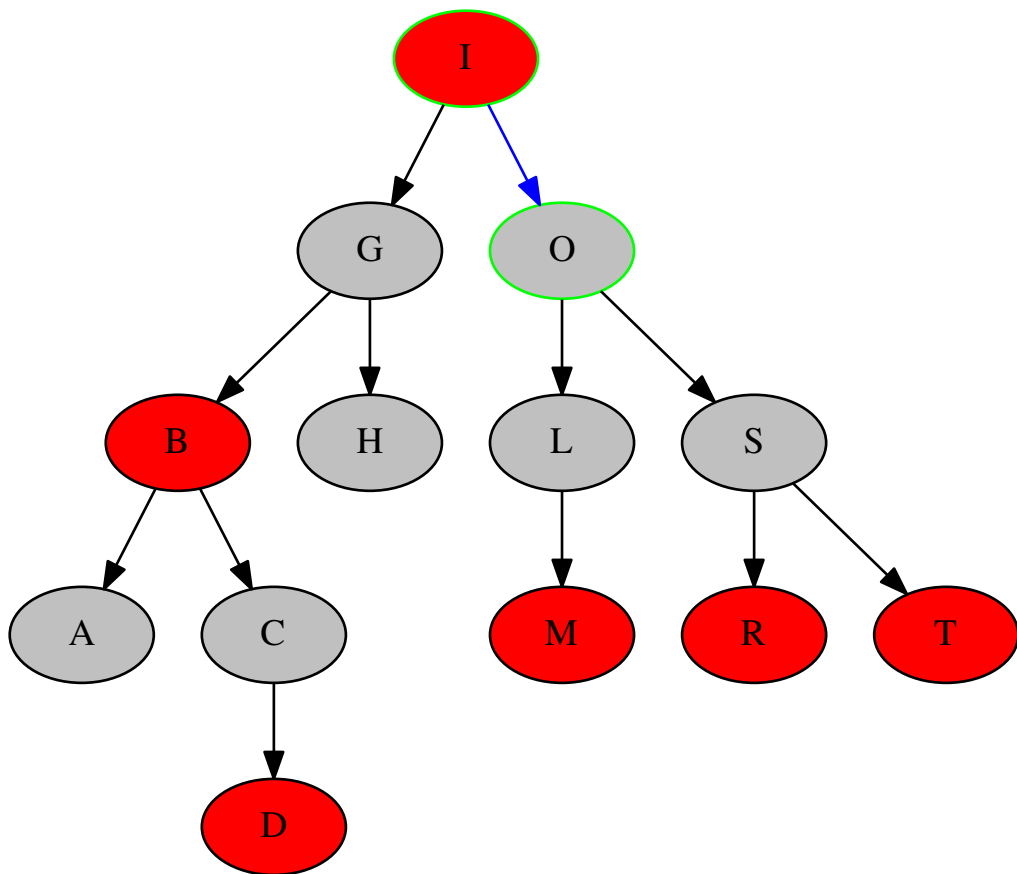
Fixing tree - Case 1: Red Uncle: Recolored nodes



ALGORITHMS CAMBRID

ABCDGHILMORST

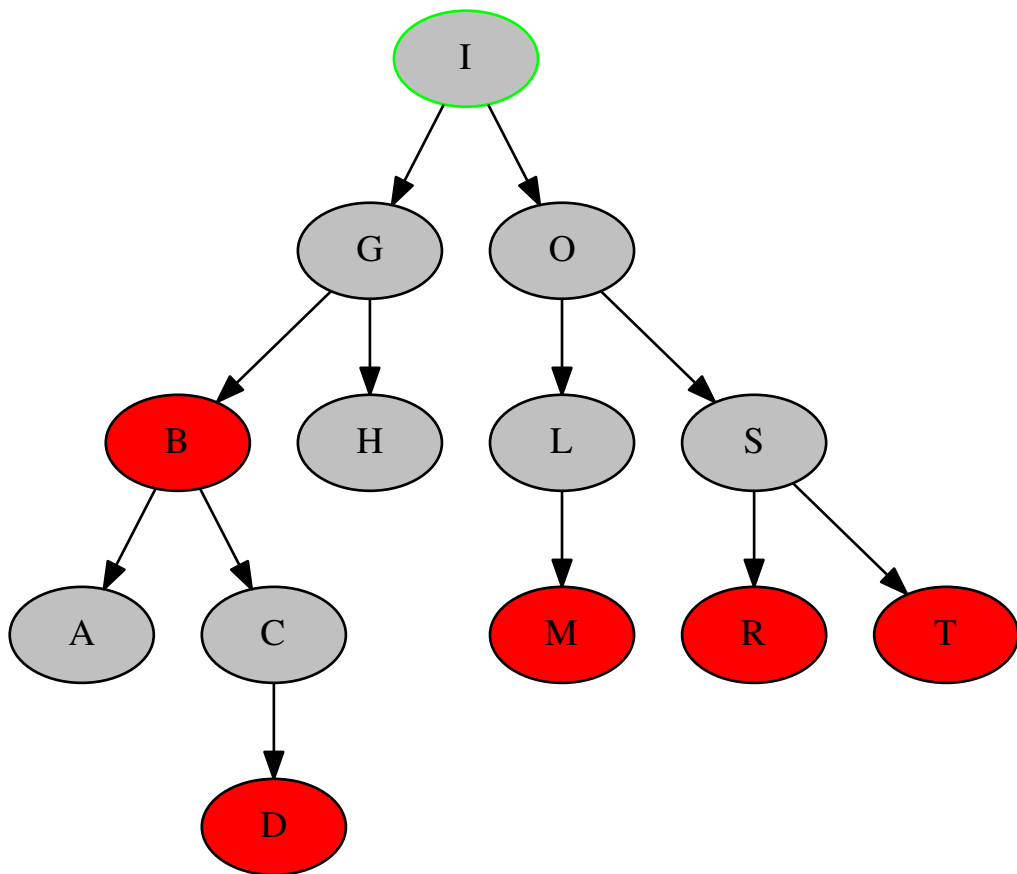
Fixing tree - Case 1: Red Uncle: Recoloring nodes



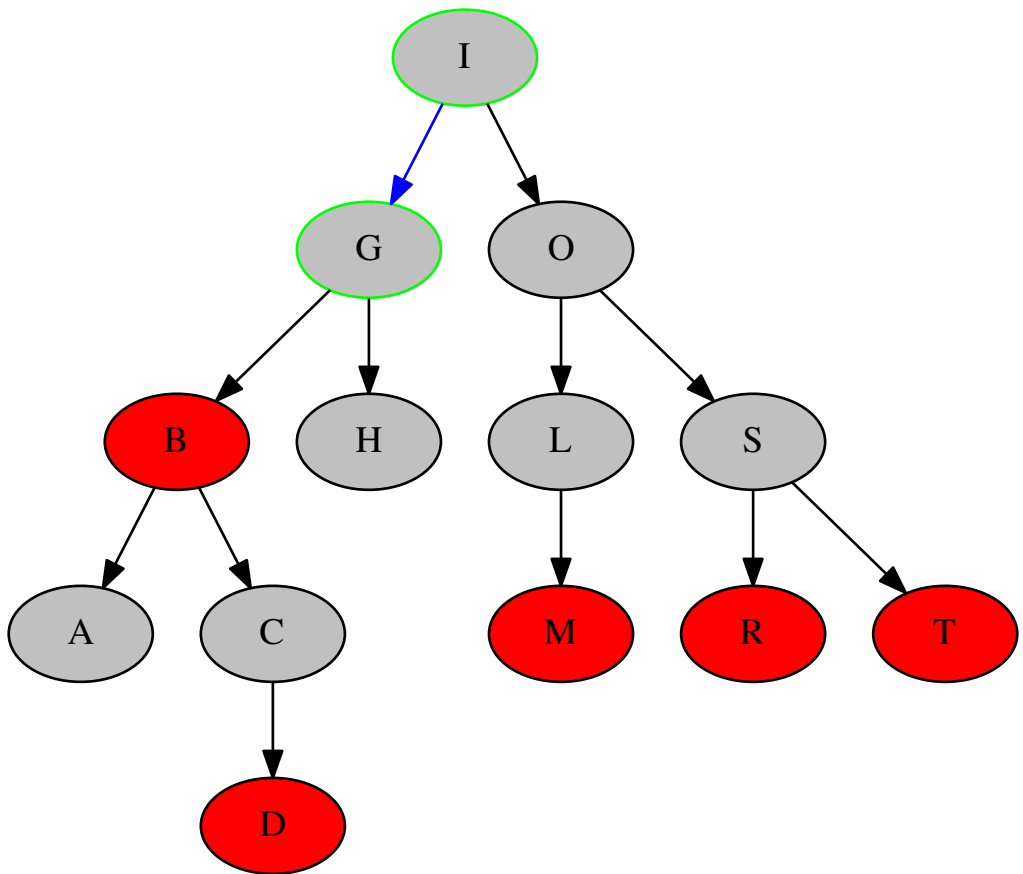
ALGORITHMS CAMBRID

ABCDGHILMORST

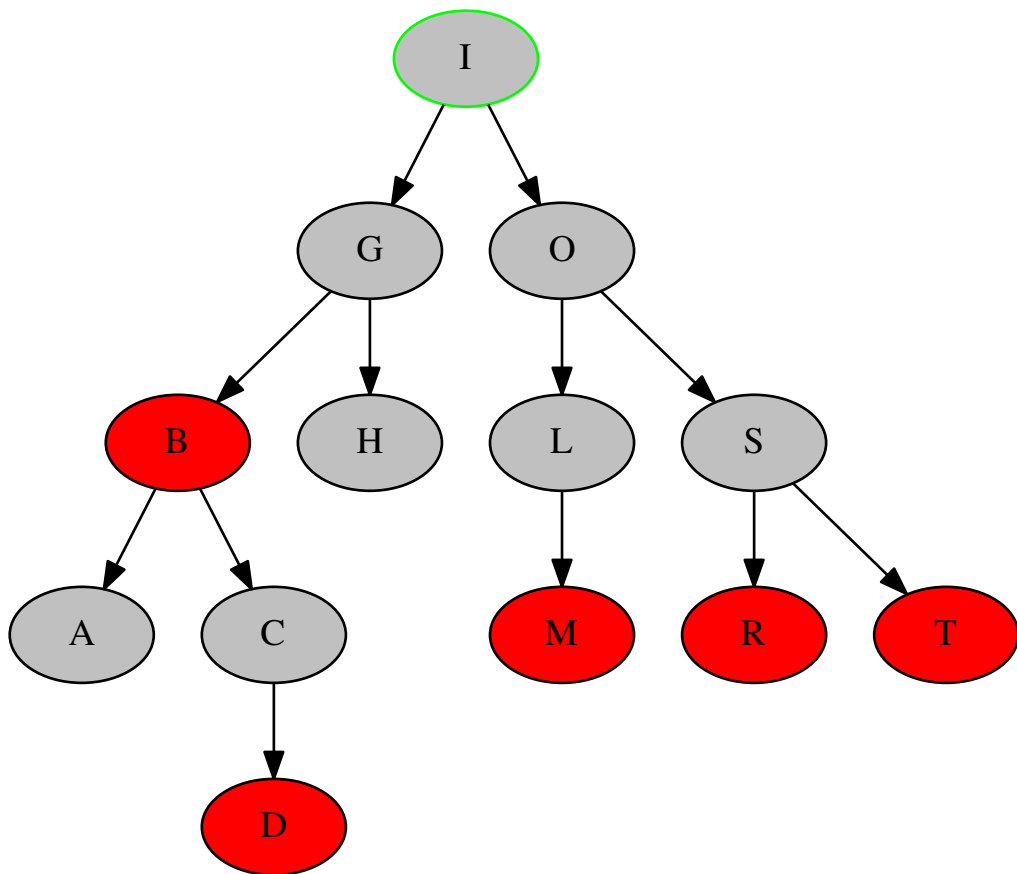
Fixing tree - Case 1: Red Uncle: Recolored nodes



ALGORITHMS CAMBRIDGE
ABCDGHILMORST
Looking for place to insert G



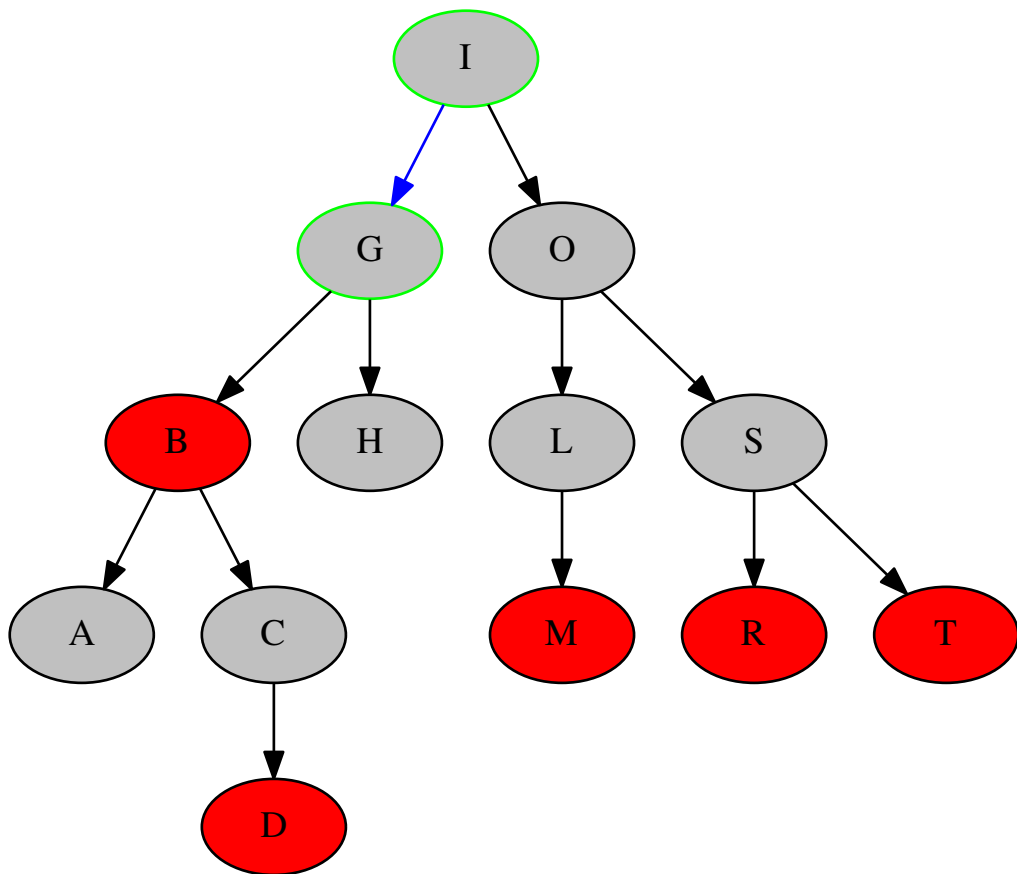
ALGORITHMS CAMBRIDG
ABCDGHILMORST
Looking for place to insert G



ALGORITHMS CAMBRIDGE

ABCDGHILMORST

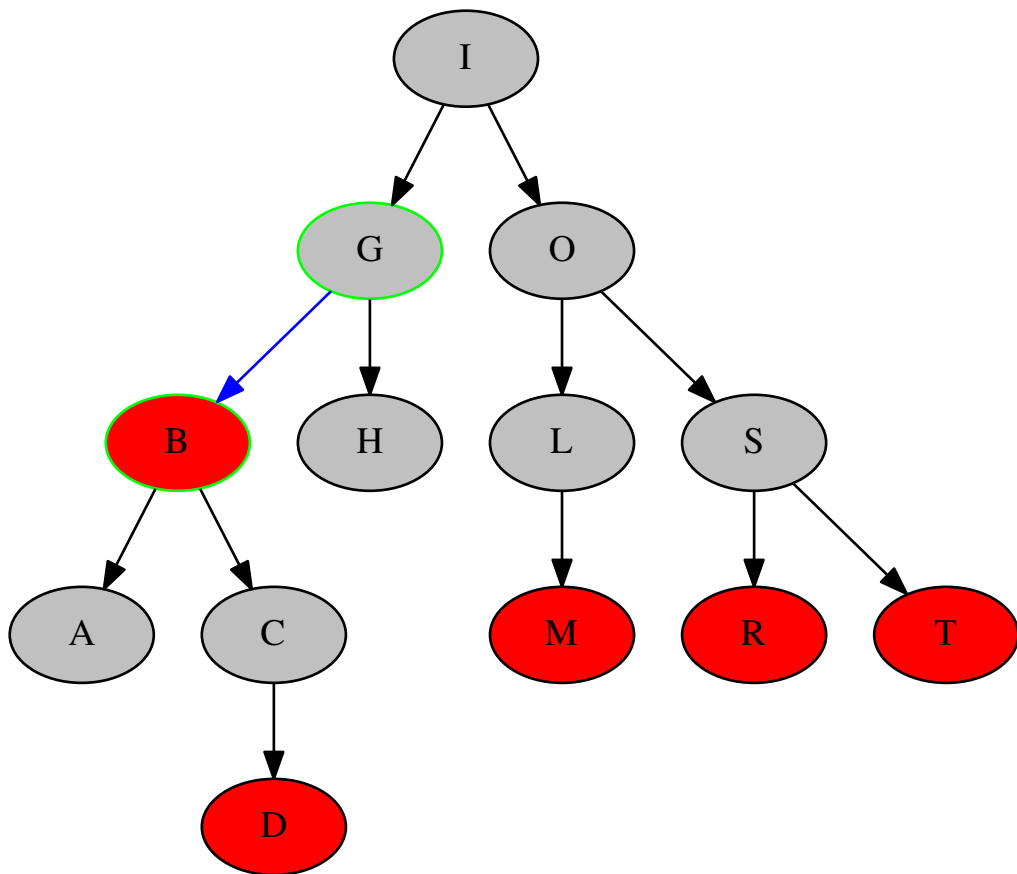
Looking for place to insert E



ALGORITHMS CAMBRIDGE

ABCDGHILMORST

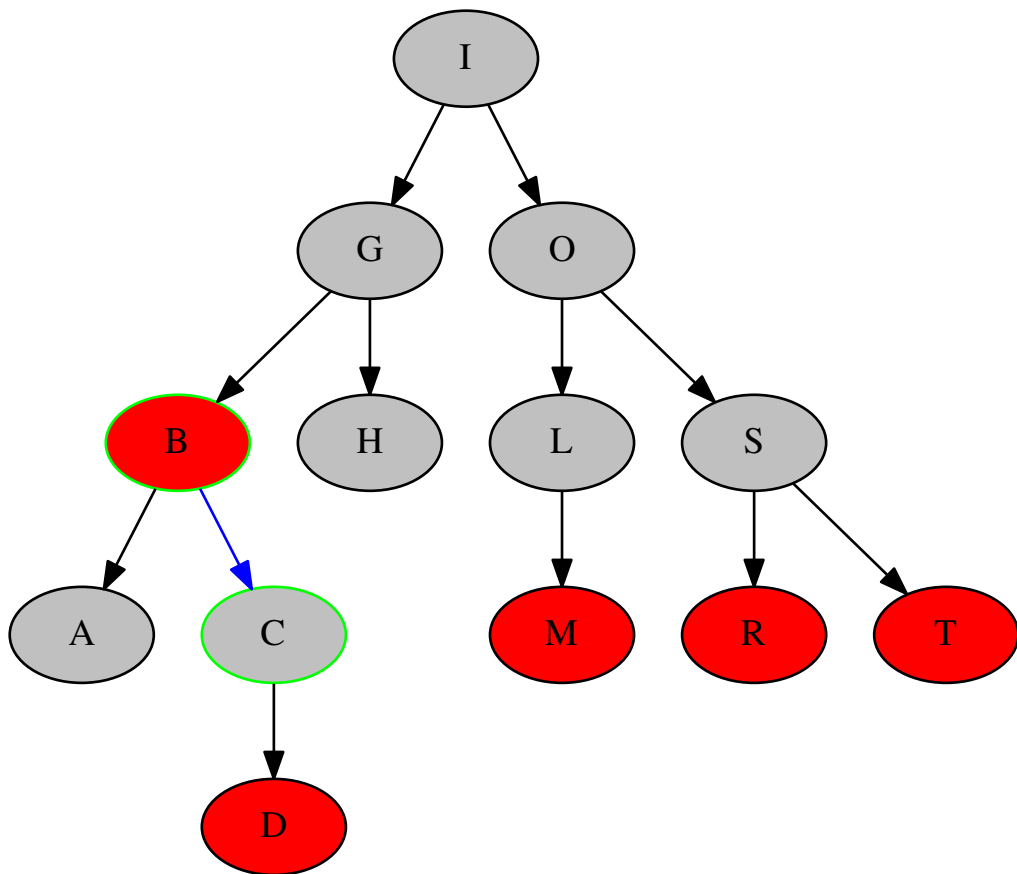
Looking for place to insert E



ALGORITHMS CAMBRIDGE

ABCDGHILMORST

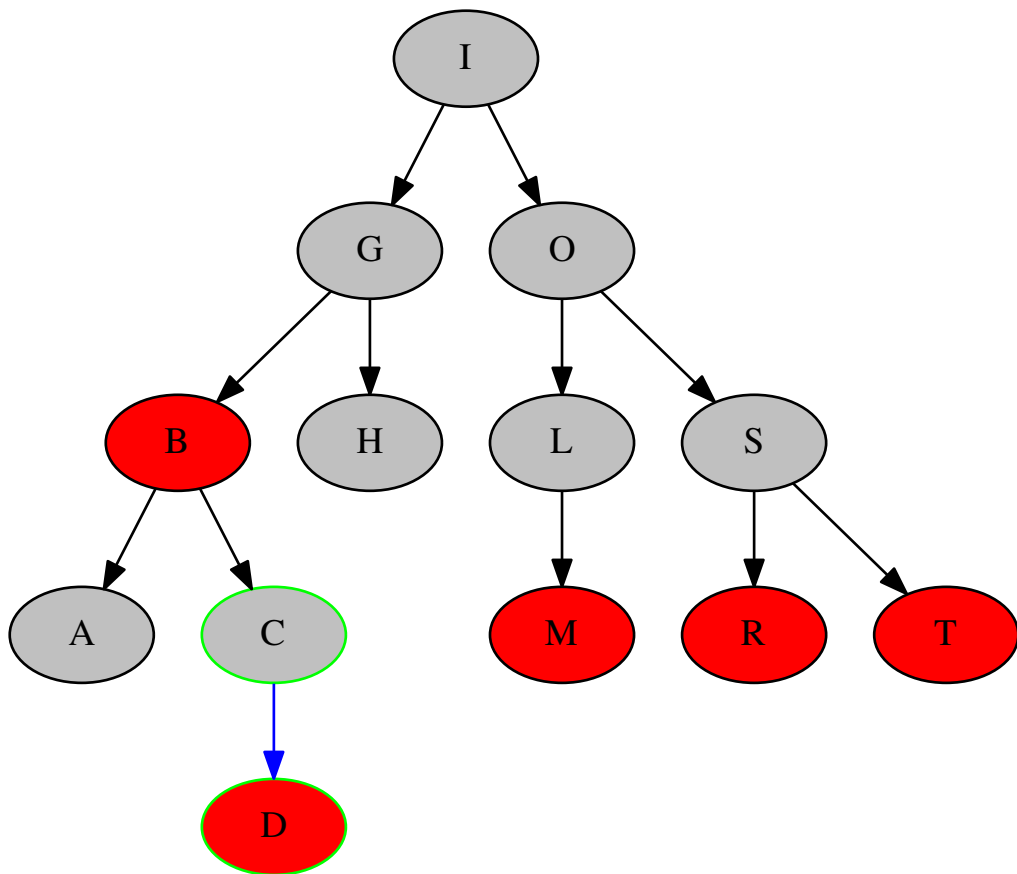
Looking for place to insert E



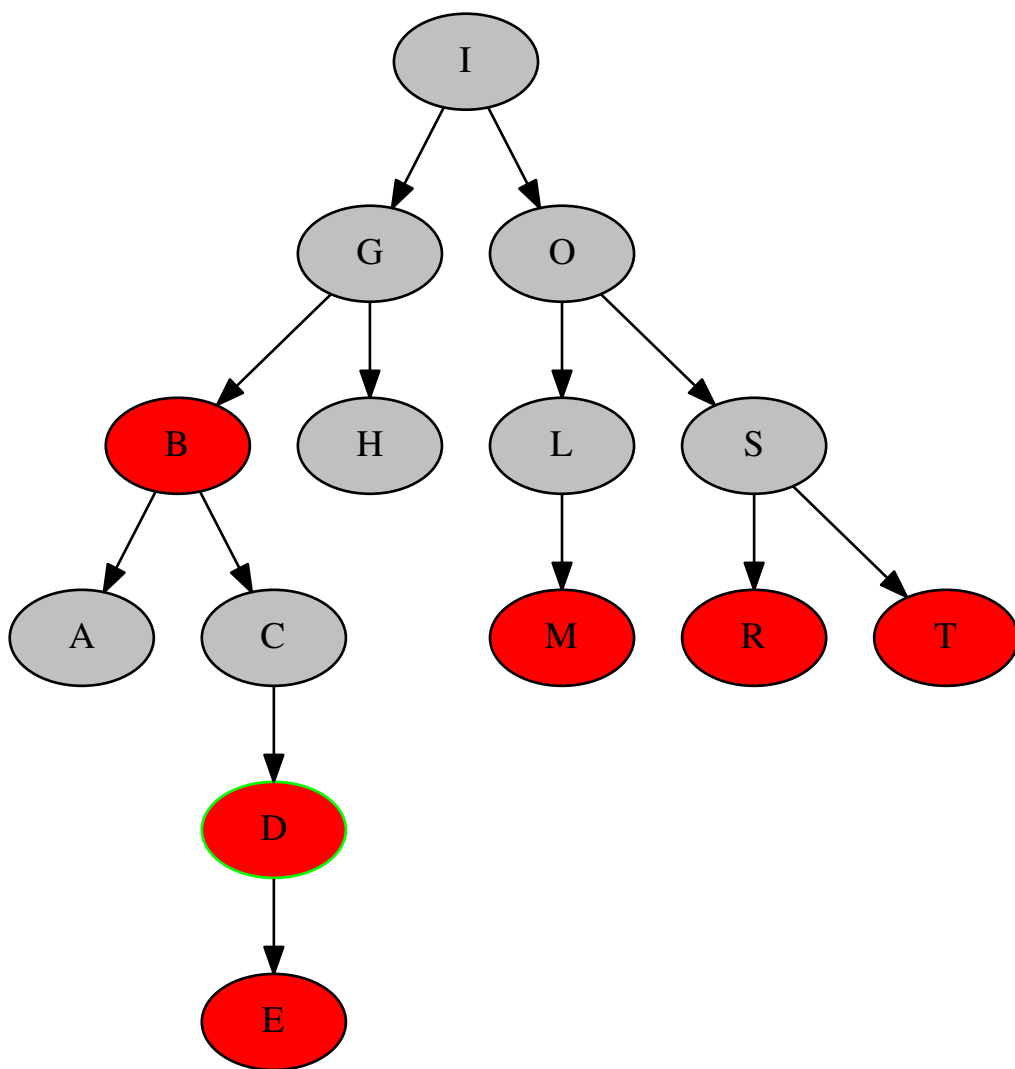
ALGORITHMS CAMBRIDGE

ABCDGHILMORST

Looking for place to insert E



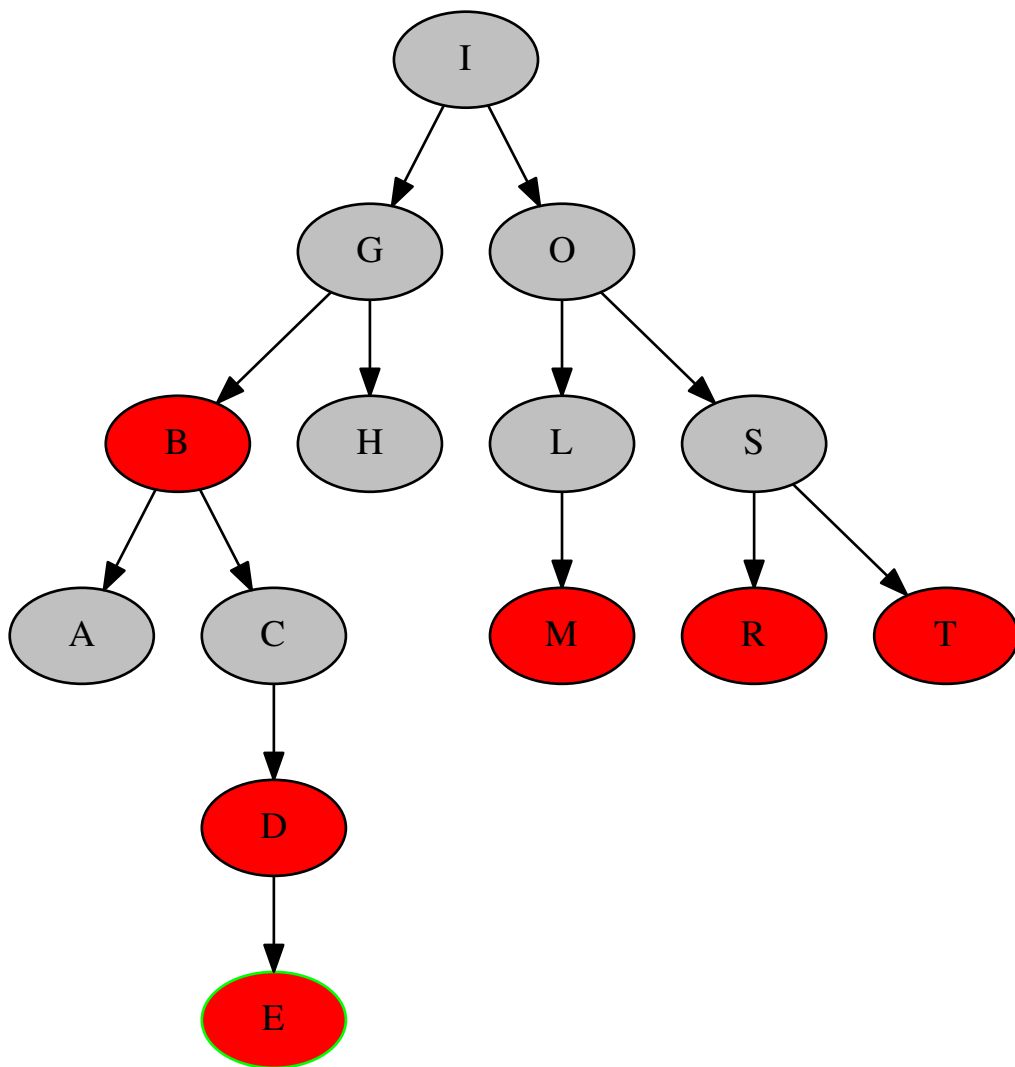
ALGORITHMS CAMBRIDGE
ABCDGHILMORST
Looking for place to insert E



ALGORITHMS CAMBRIDGE

ABCDEFGHILMORST

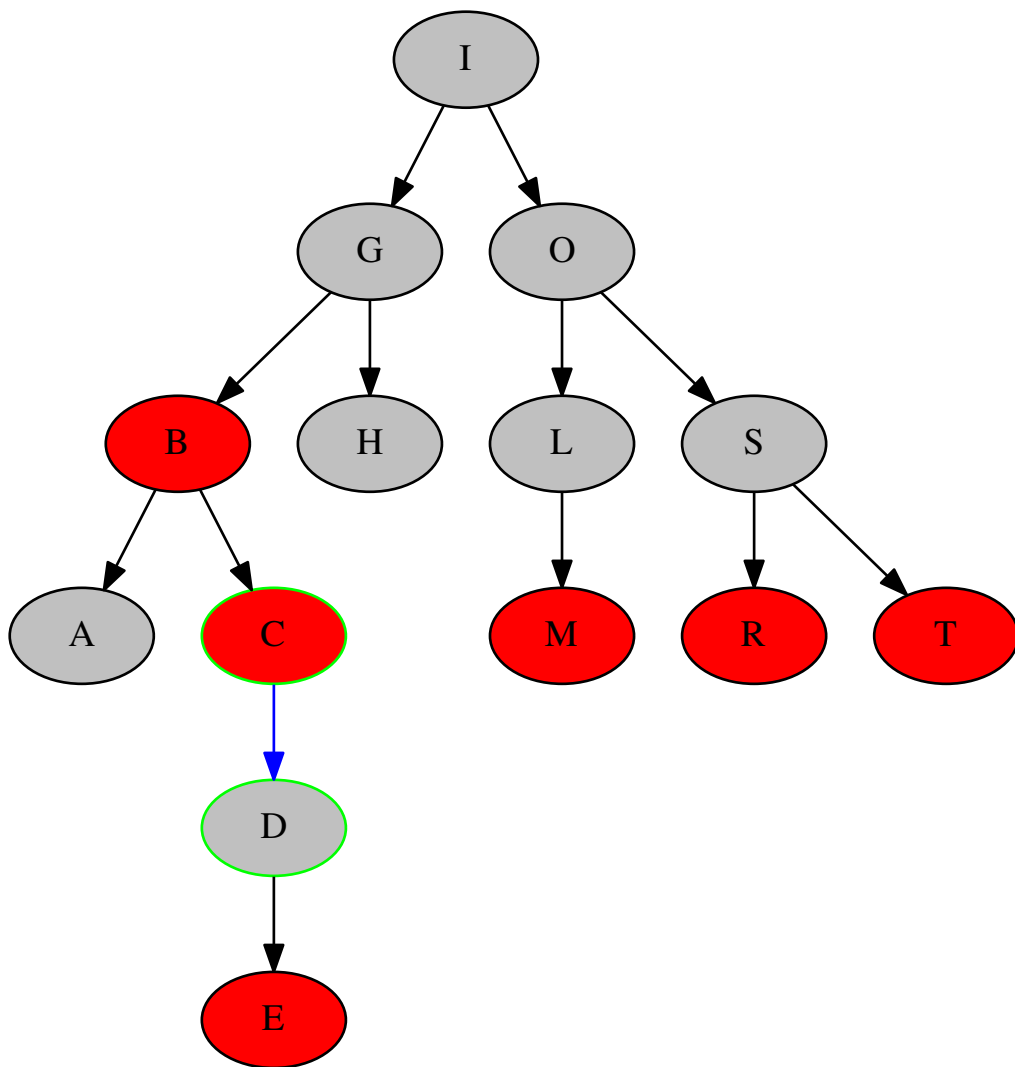
Inserted E



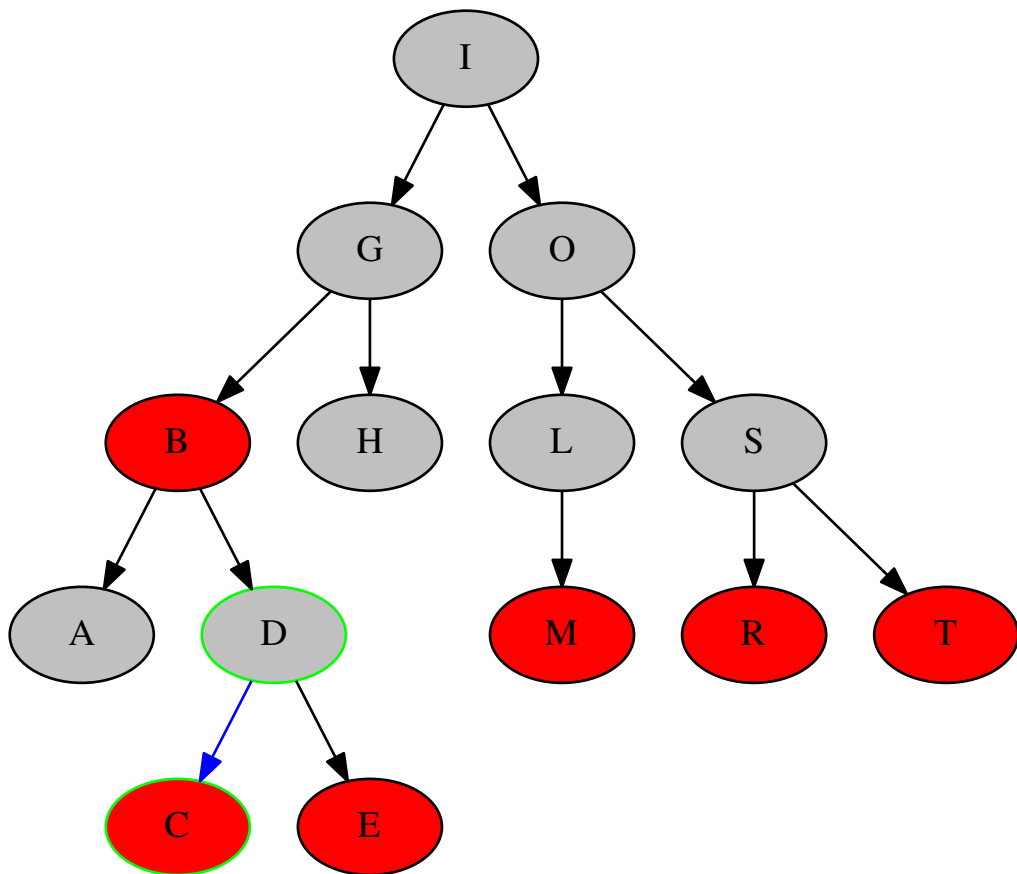
ALGORITHMS CAMBRIDGE

ABCDEFGHILMORST

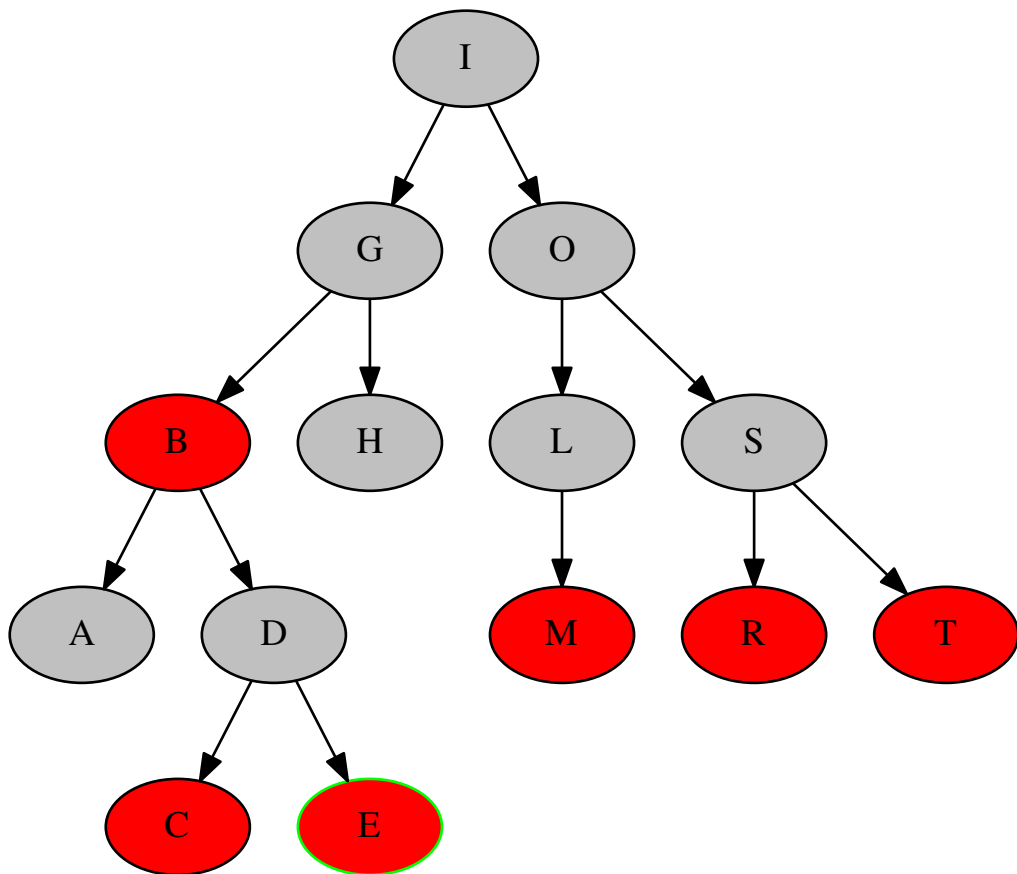
Fixing tree - Case 2: Black Uncle: Rotating tree



ALGORITHMS CAMBRIDGE
ABCDEFGHILMORST
Performing left rotation



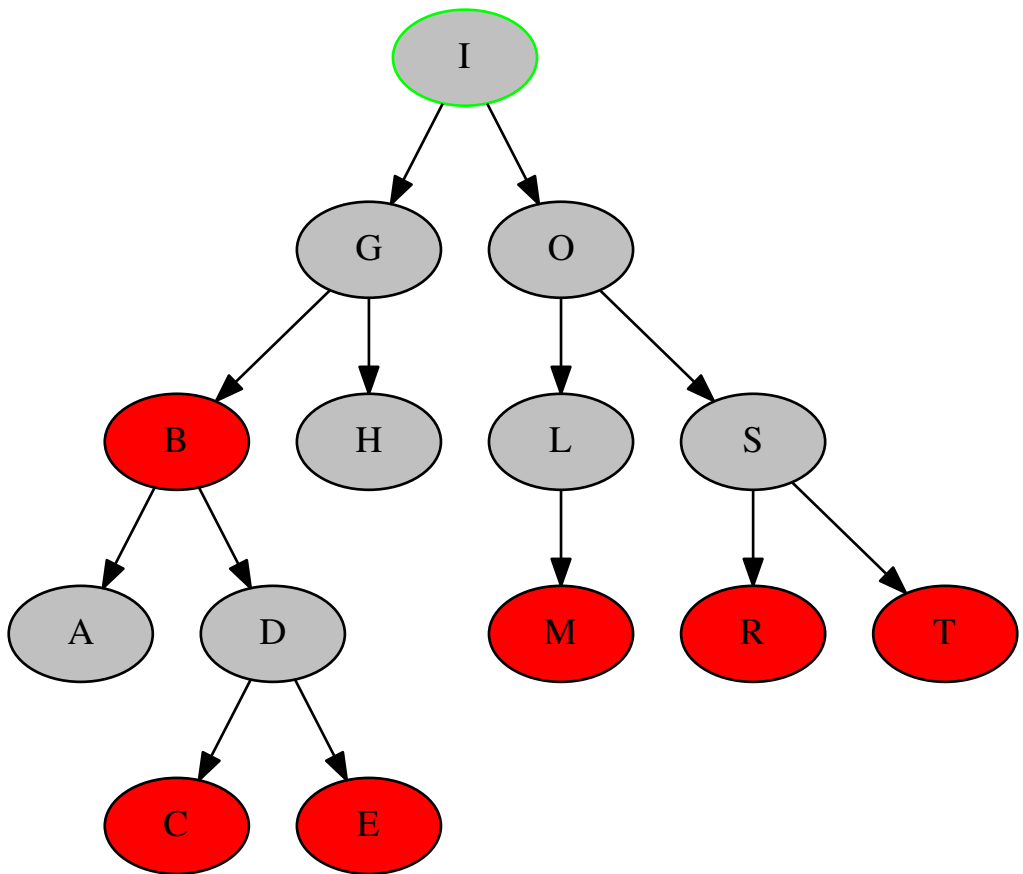
ALGORITHMS CAMBRIDGE
ABCDEFGHILMORST
Performed left rotation



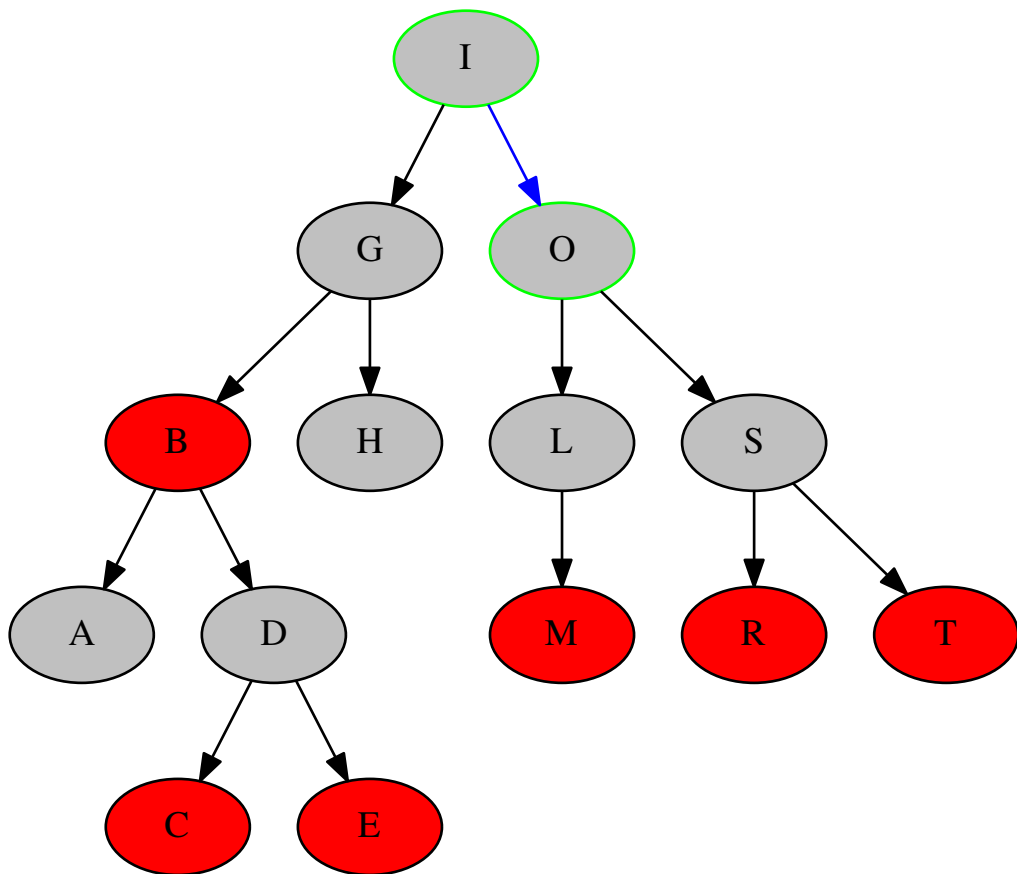
ALGORITHMS CAMBRIDGE

ABCDEFGHILMORST

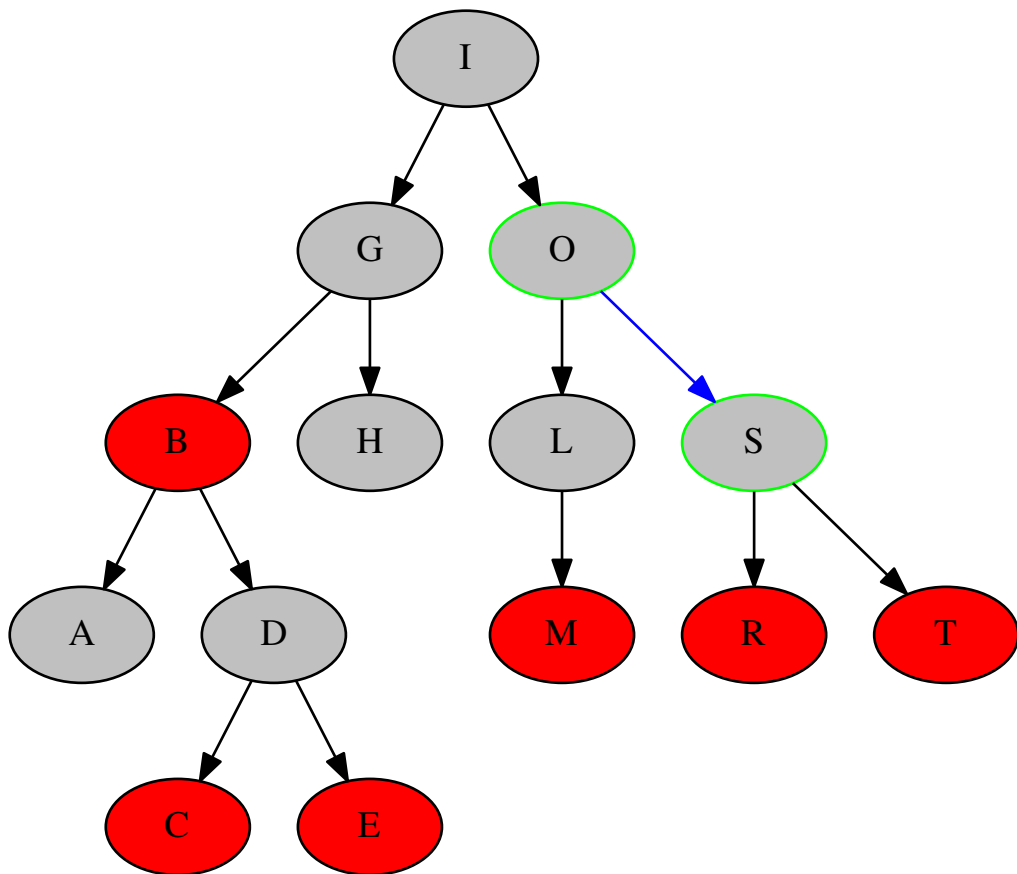
Fixing tree - Case 2: Black Uncle: Rotated tre



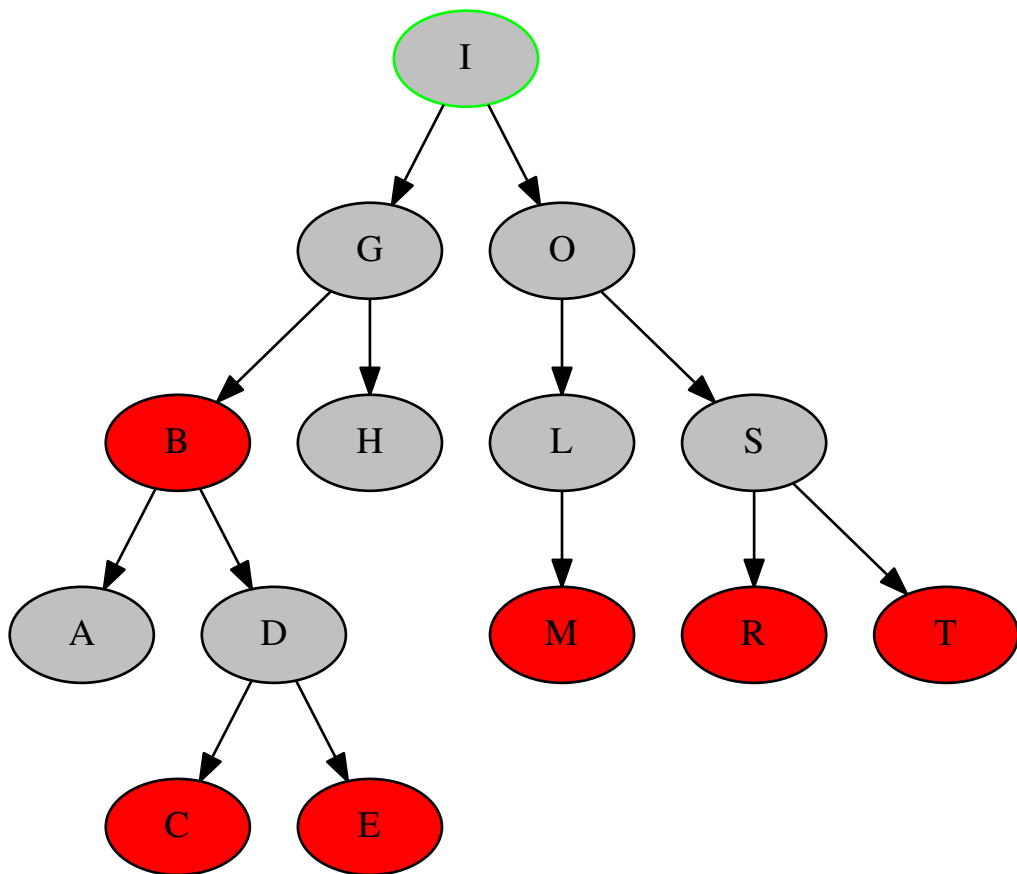
ALGORITHMS CAMBRIDGE S
ABCDEFGHILMORST
Looking for place to insert S



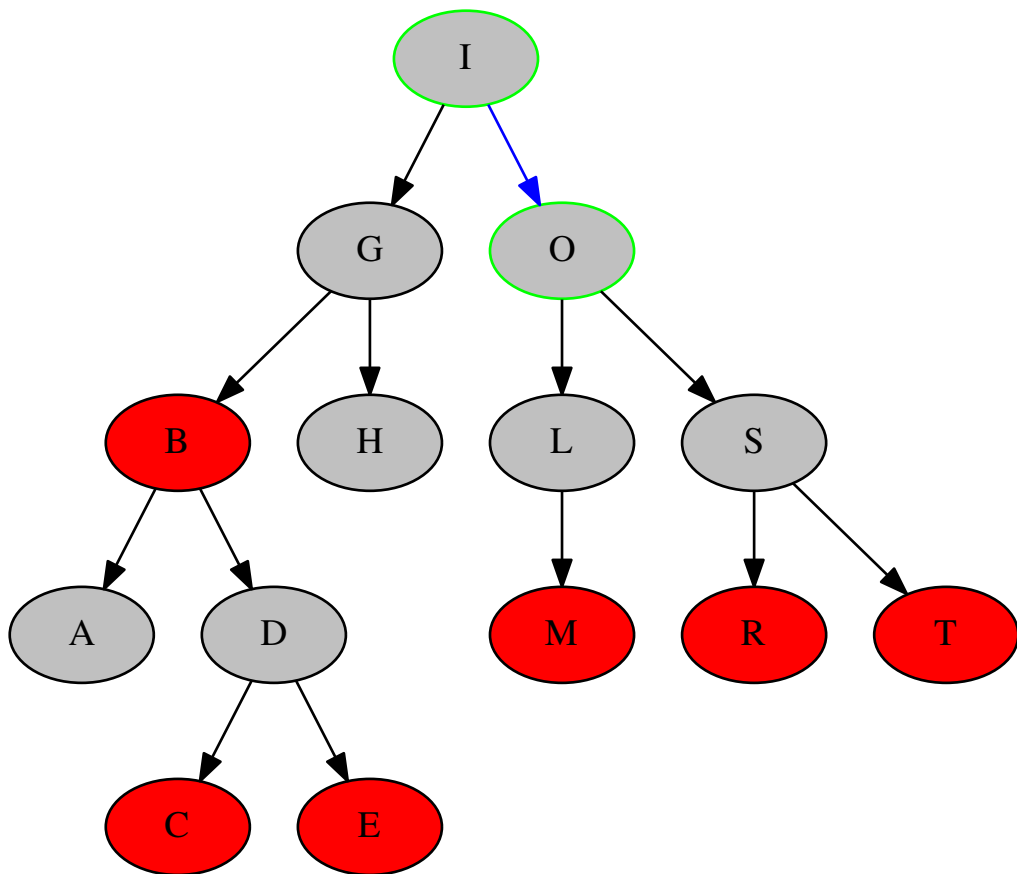
ALGORITHMS CAMBRIDGE S
ABCDEFGHILMORST
Looking for place to insert S



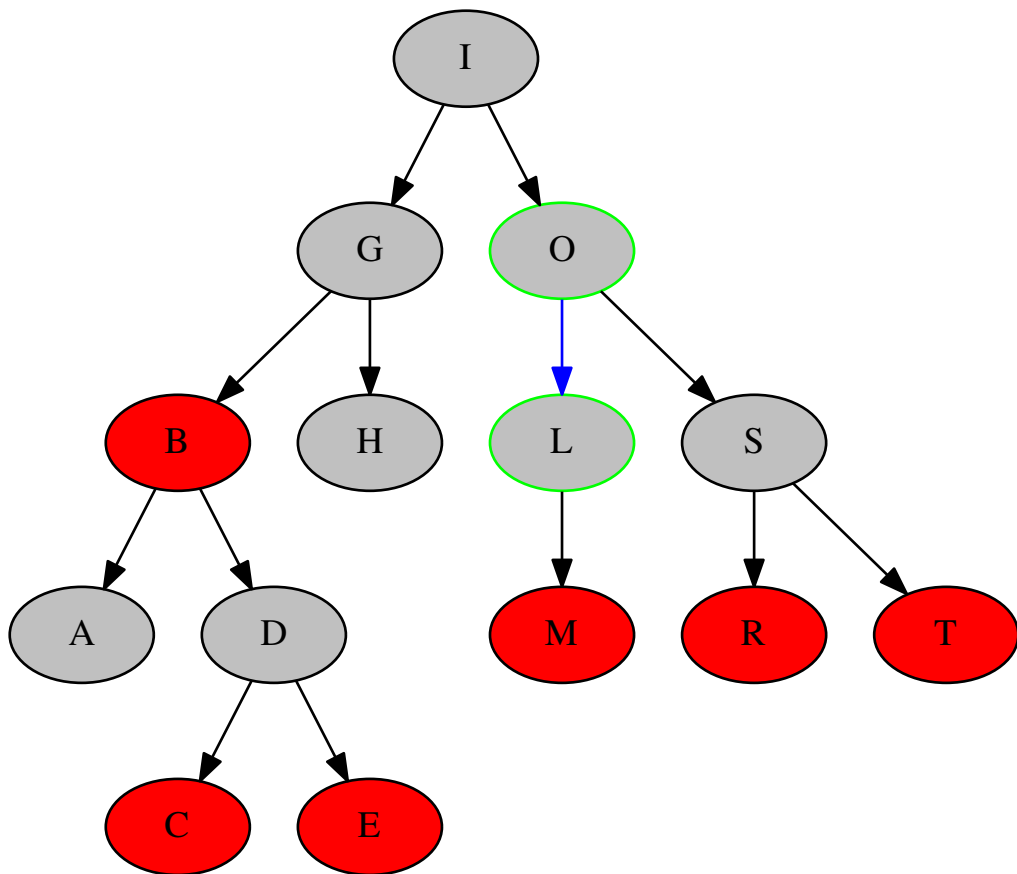
ALGORITHMS CAMBRIDGE S
ABCDEFGHILMORST
Looking for place to insert S



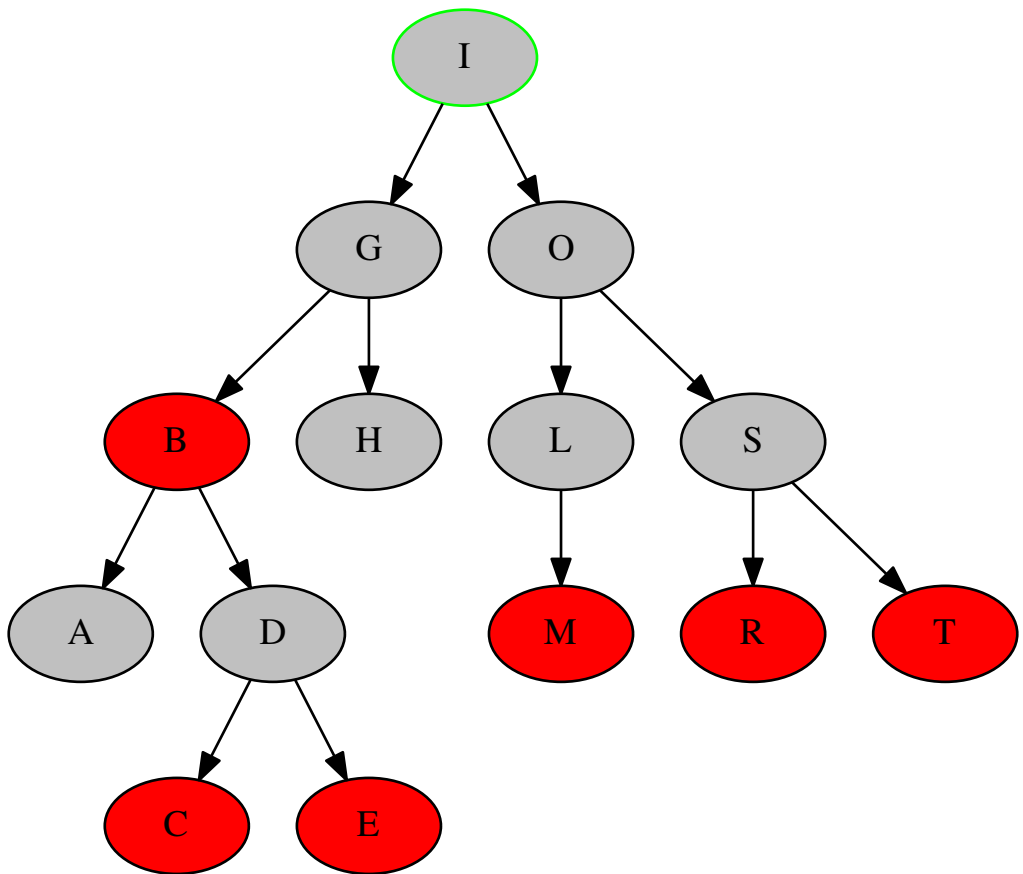
ALGORITHMS CAMBRIDGE SL
ABCDEFGHILMORST
Looking for place to insert L



ALGORITHMS CAMBRIDGE SL
ABCDEFGHILMORST
Looking for place to insert L



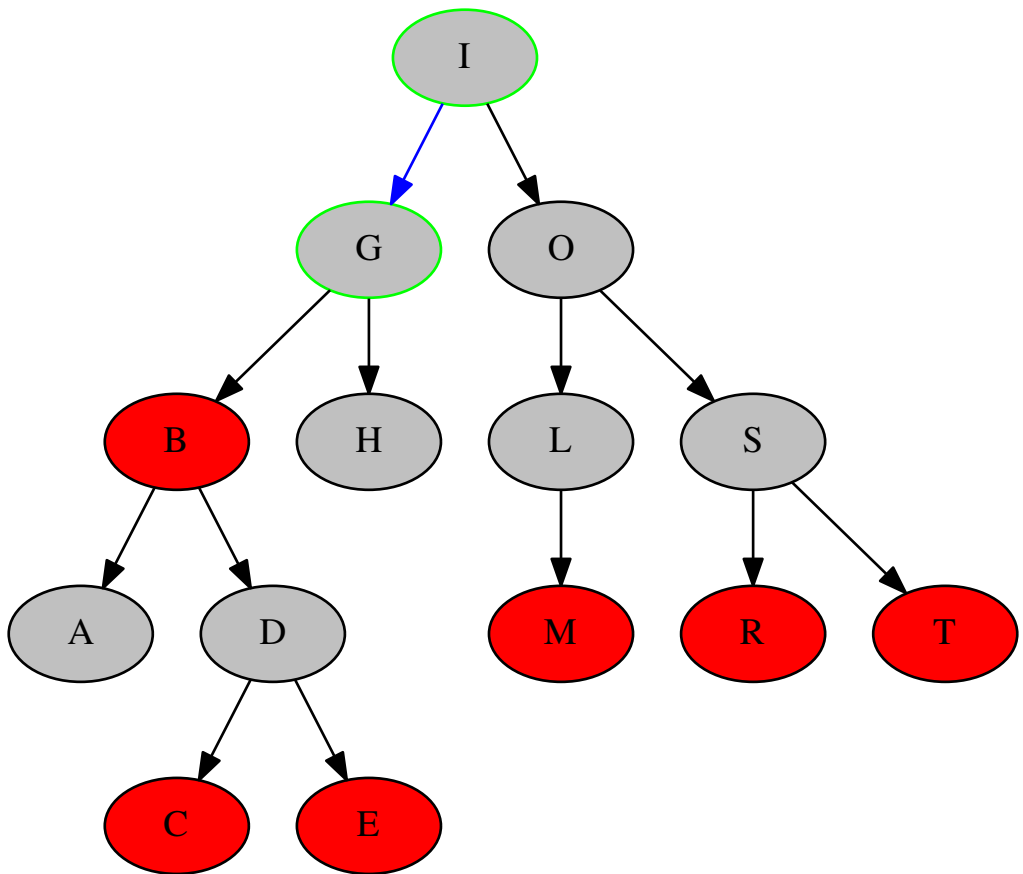
ALGORITHMS CAMBRIDGE SL
ABCDEFGHILMORST
Looking for place to insert L



ALGORITHMS CAMBRIDGE SL7

ABCDEFGHILMORST

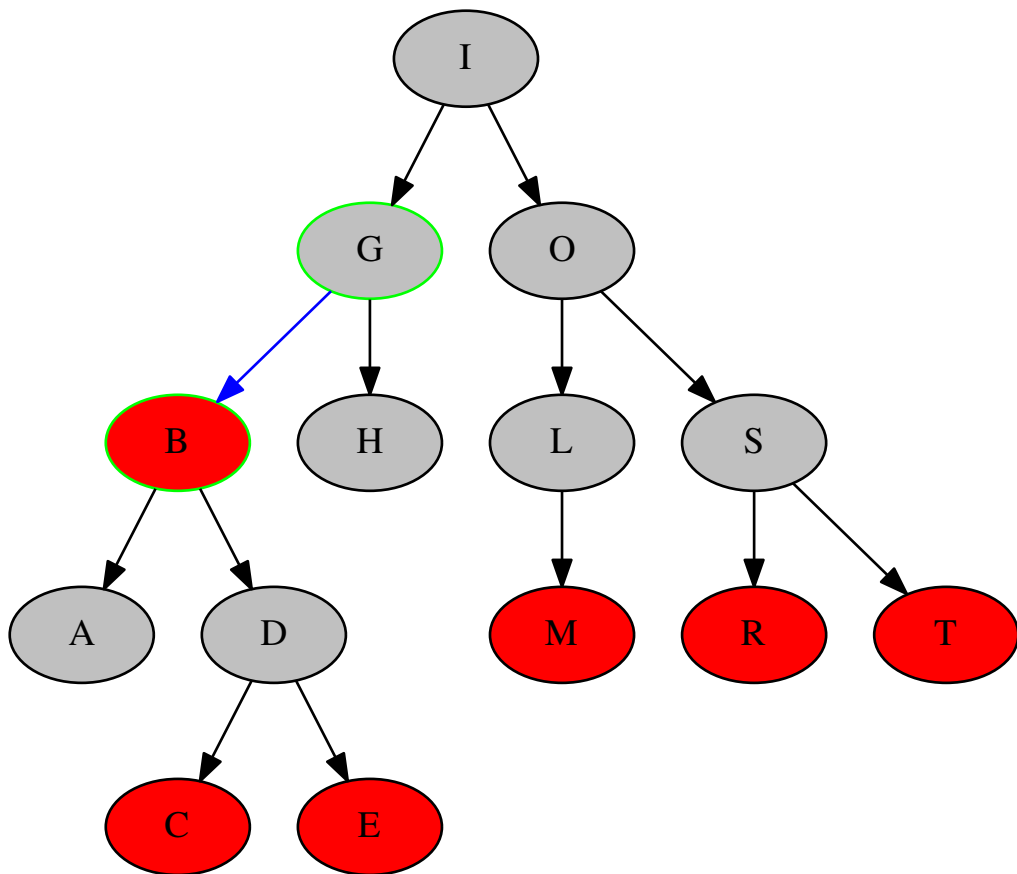
Looking for place to insert 7



ALGORITHMS CAMBRIDGE SL7

ABCDEFGHILMORST

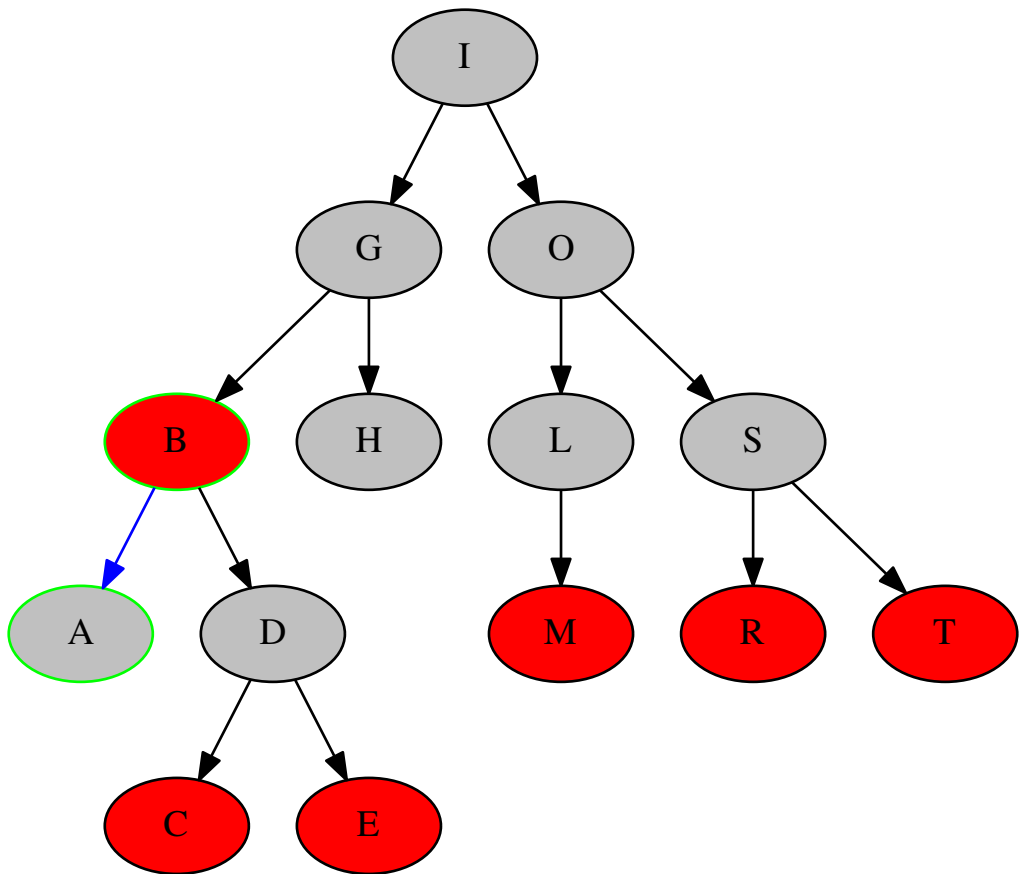
Looking for place to insert 7



ALGORITHMS CAMBRIDGE SL7

ABCDEFGHILMORST

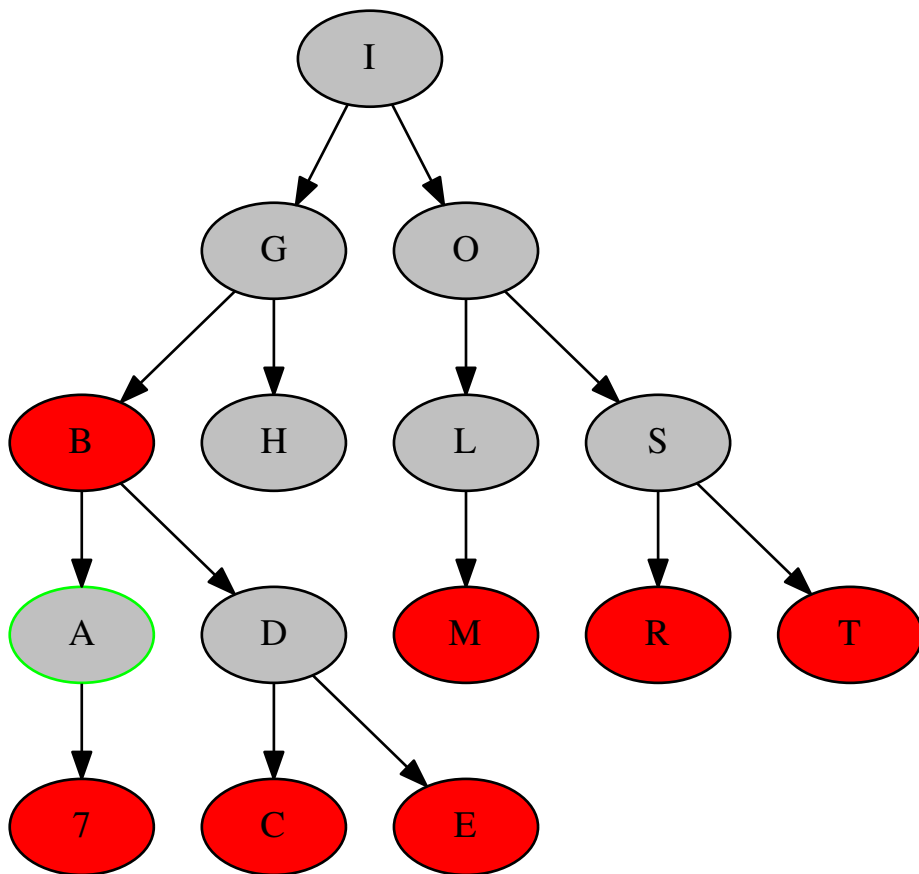
Looking for place to insert 7



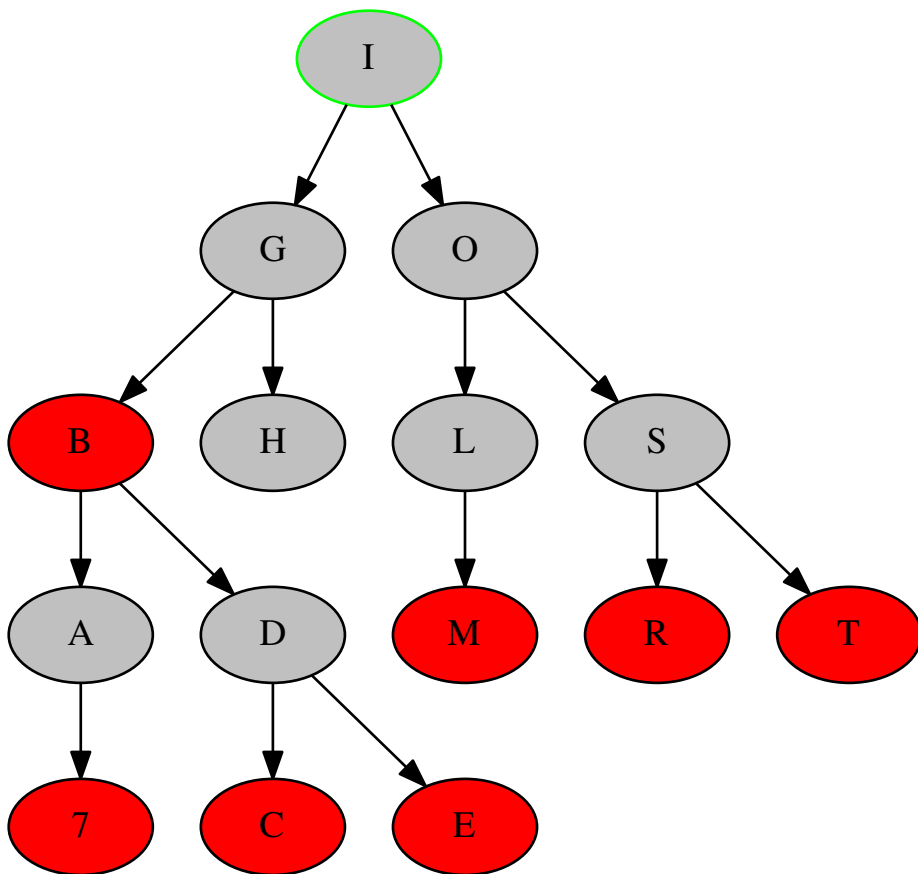
ALGORITHMS CAMBRIDGE SL7

ABCDEFGHILMORST

Looking for place to insert 7



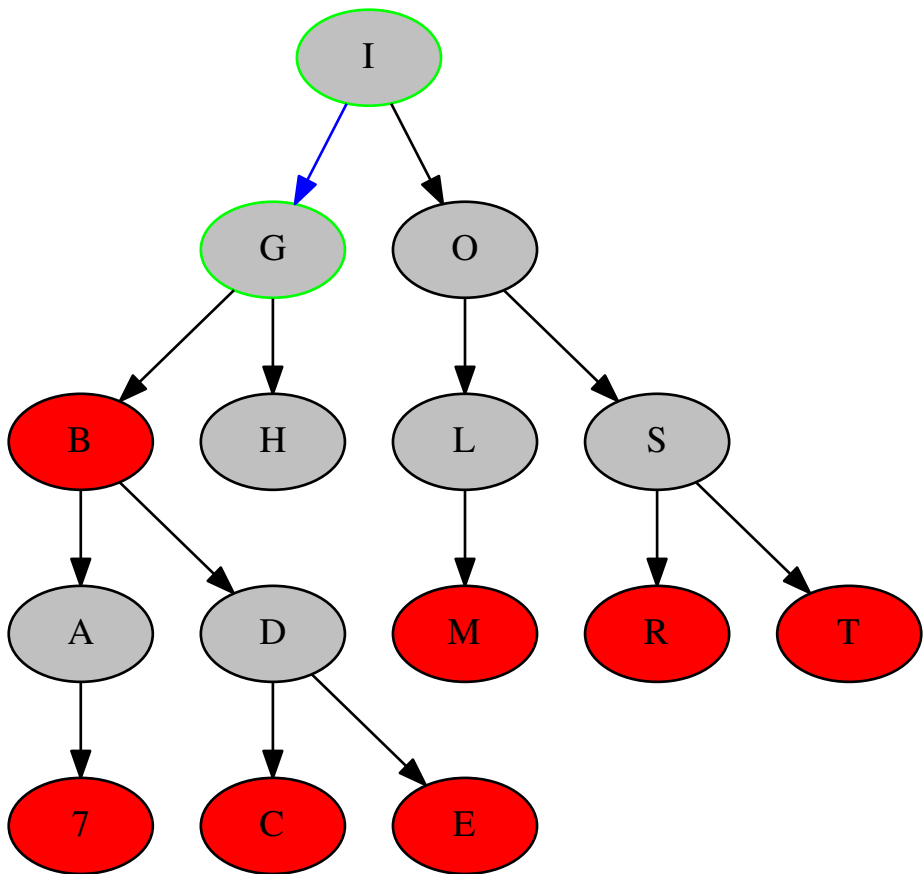
ALGORITHMS CAMBRIDGE SL7
7ABCDEGHILMORST
Inserted 7



ALGORITHMS CAMBRIDGE SL71

7ABCDEGHILMORST

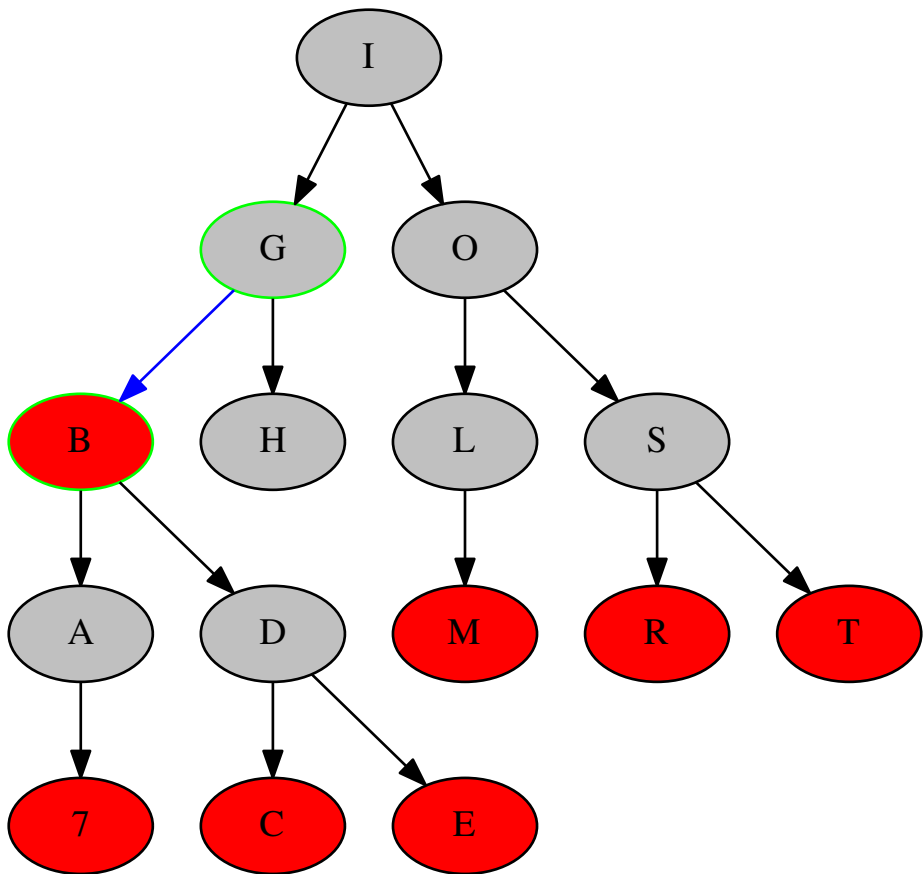
Looking for place to insert 1



ALGORITHMS CAMBRIDGE SL71

7ABCDEGHILMORST

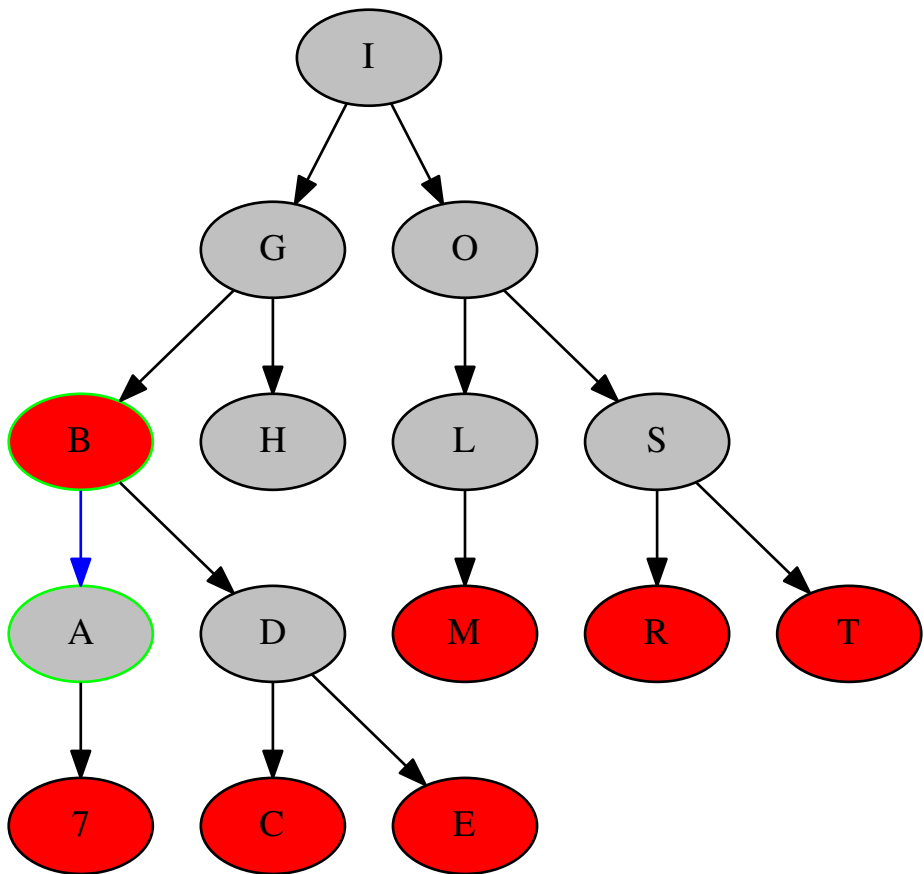
Looking for place to insert 1



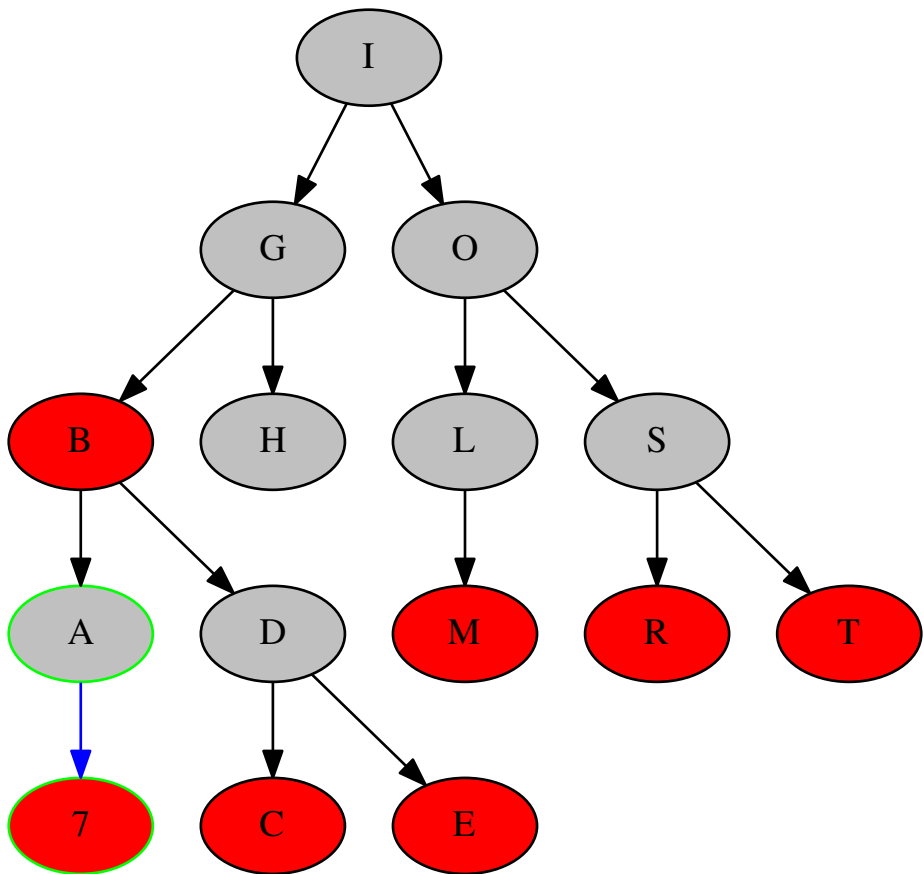
ALGORITHMS CAMBRIDGE SL71

7ABCDEGHILMORST

Looking for place to insert 1



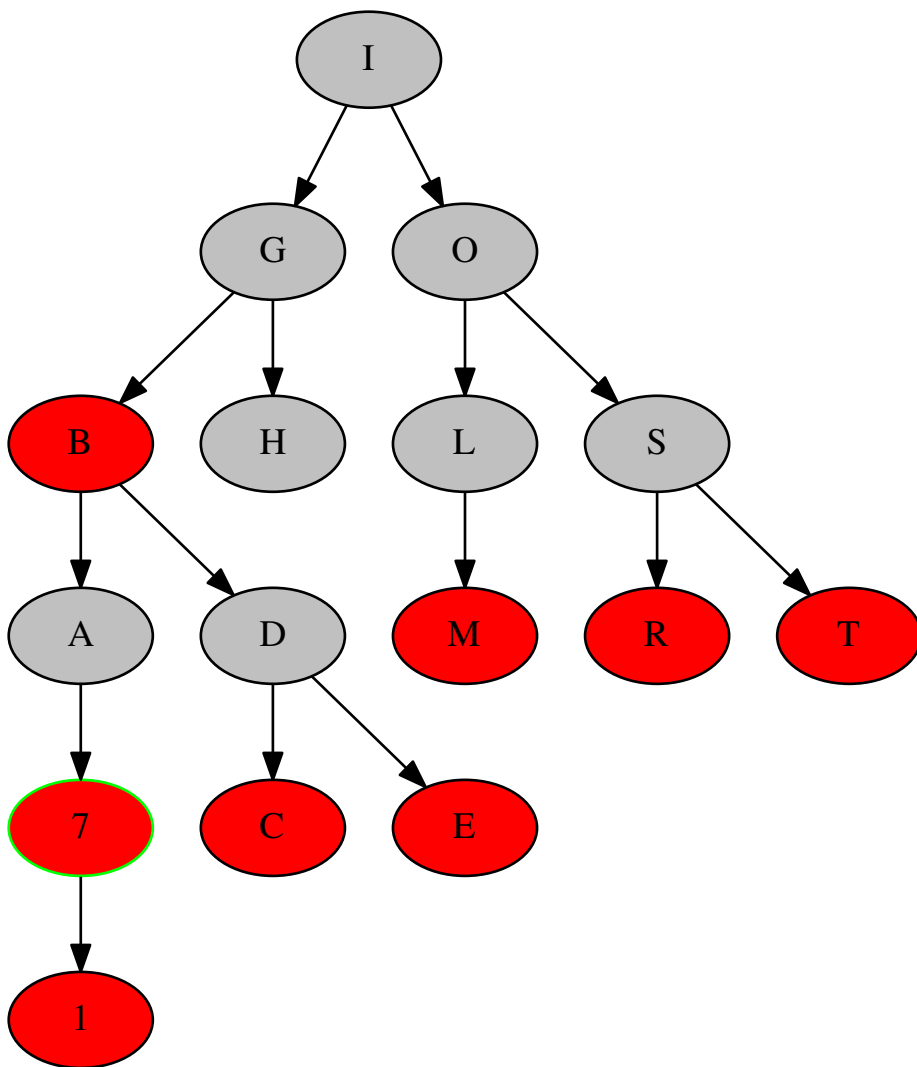
ALGORITHMS CAMBRIDGE SL71
7ABCDEGHILMORST
Looking for place to insert 1



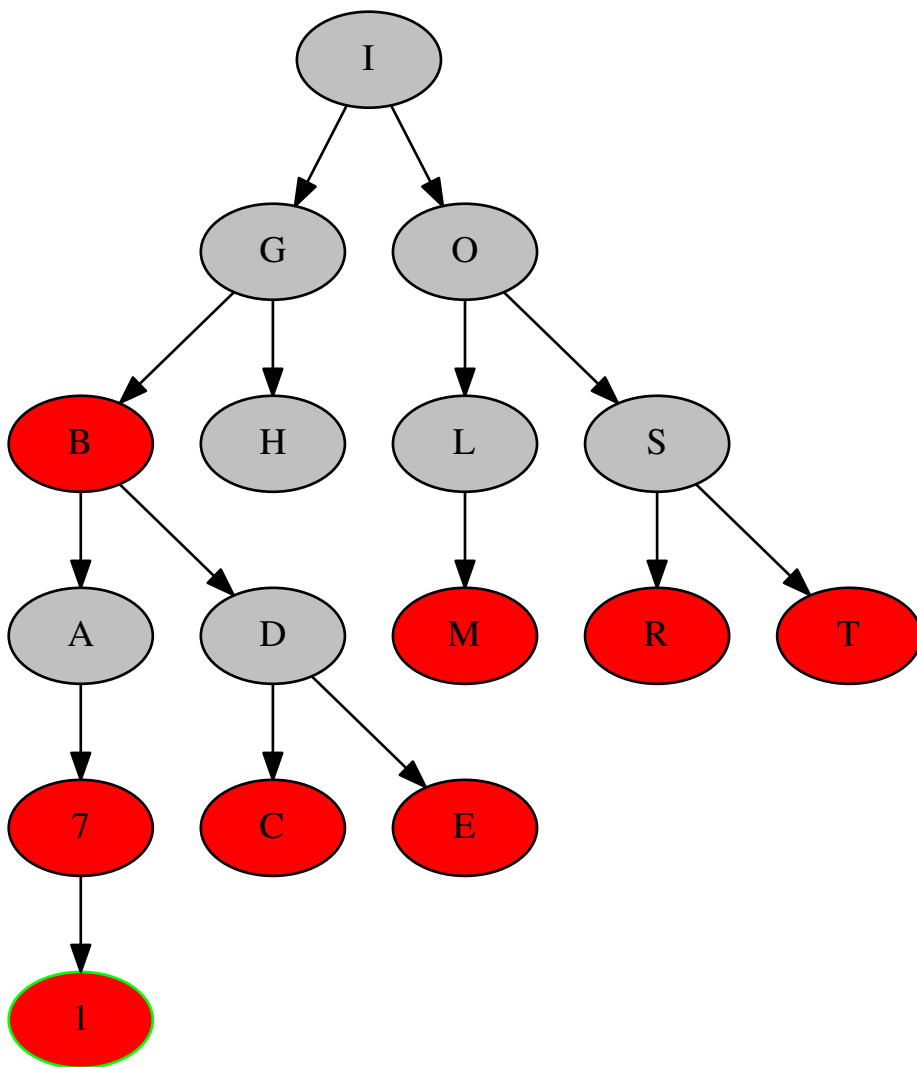
ALGORITHMS CAMBRIDGE SL71

7ABCDEGHILMORST

Looking for place to insert 1



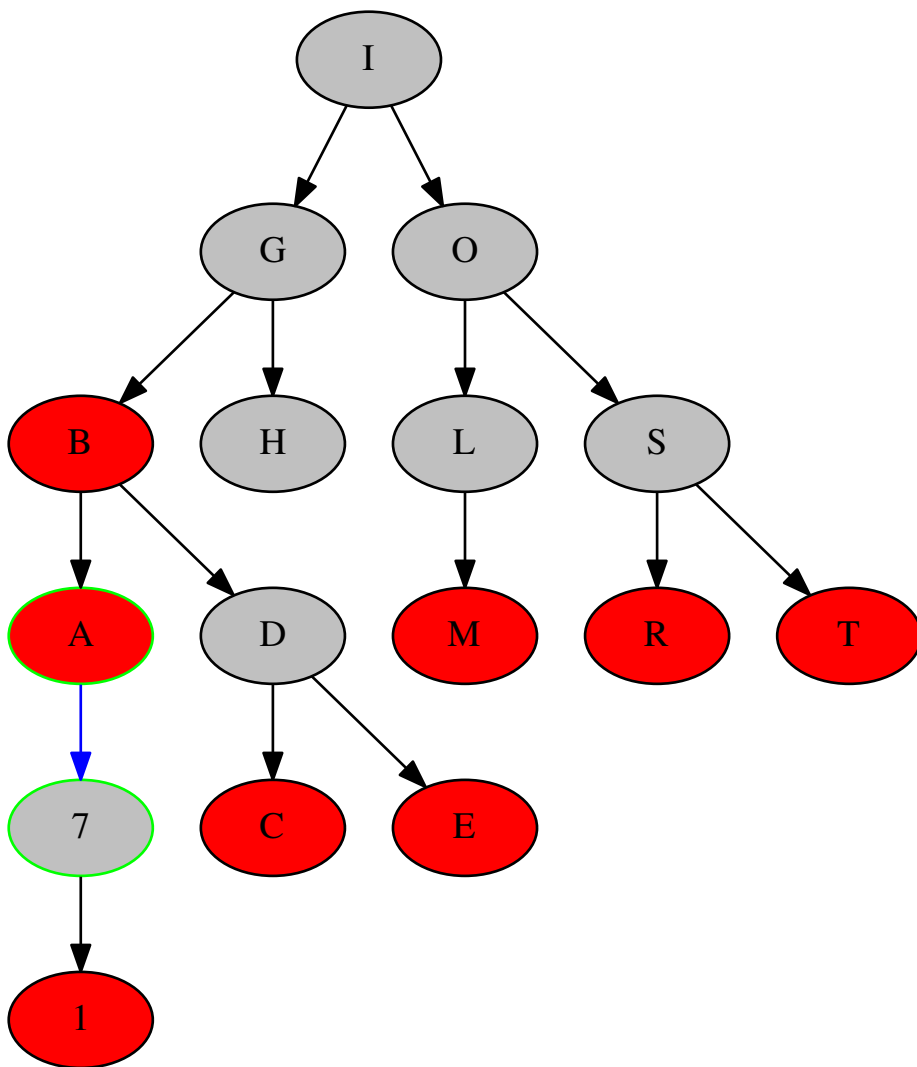
ALGORITHMS CAMBRIDGE SL71
17ABCDEFGHILMORST
Inserted 1



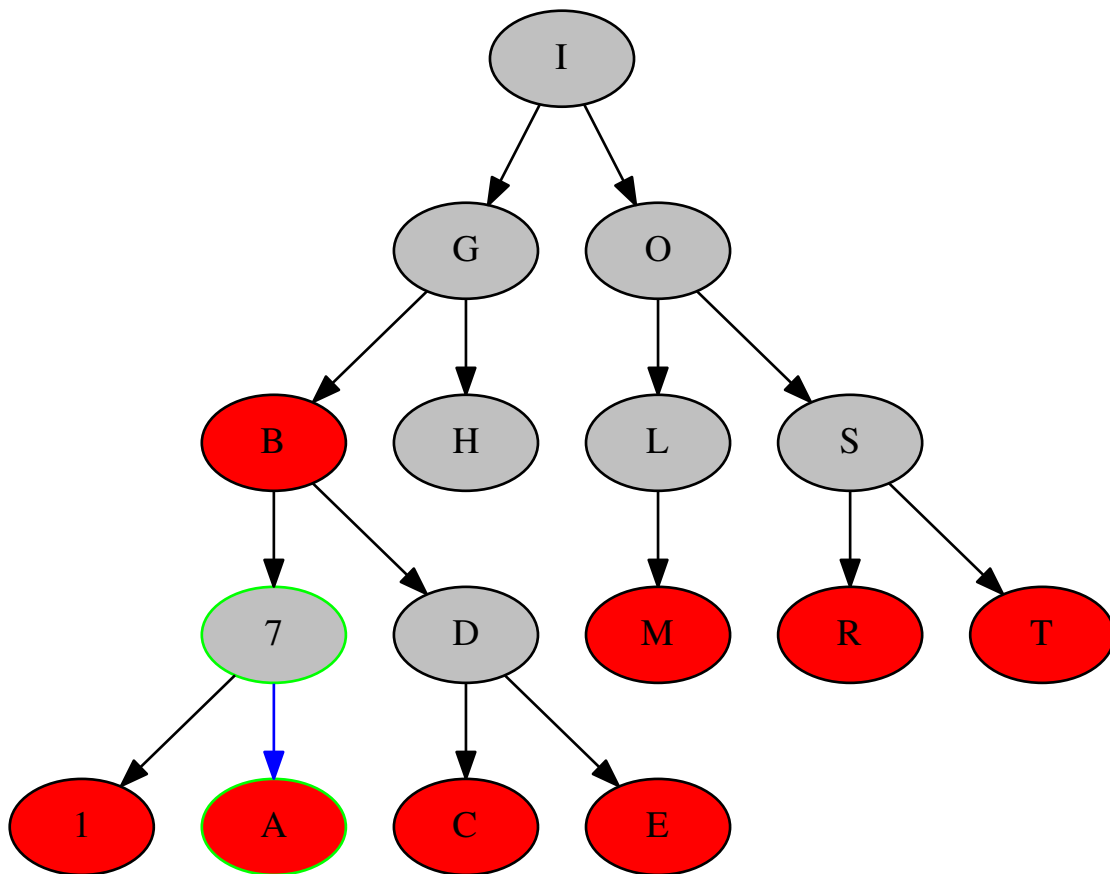
ALGORITHMS CAMBRIDGE SL71

17ABCDEFGHILMORST

Fixing tree - Case 2: Black Uncle: Rotating tree



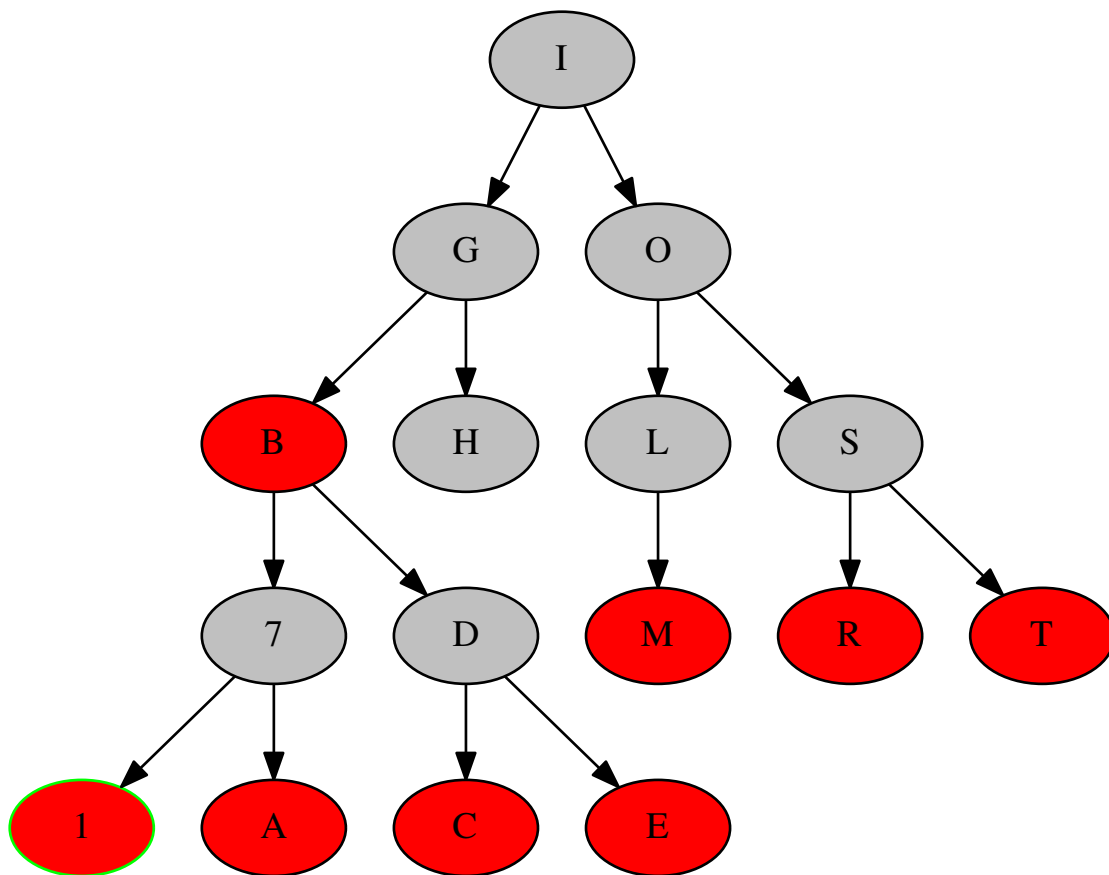
ALGORITHMS CAMBRIDGE SL71
17ABCDEFGHILMORST
Performing right rotation



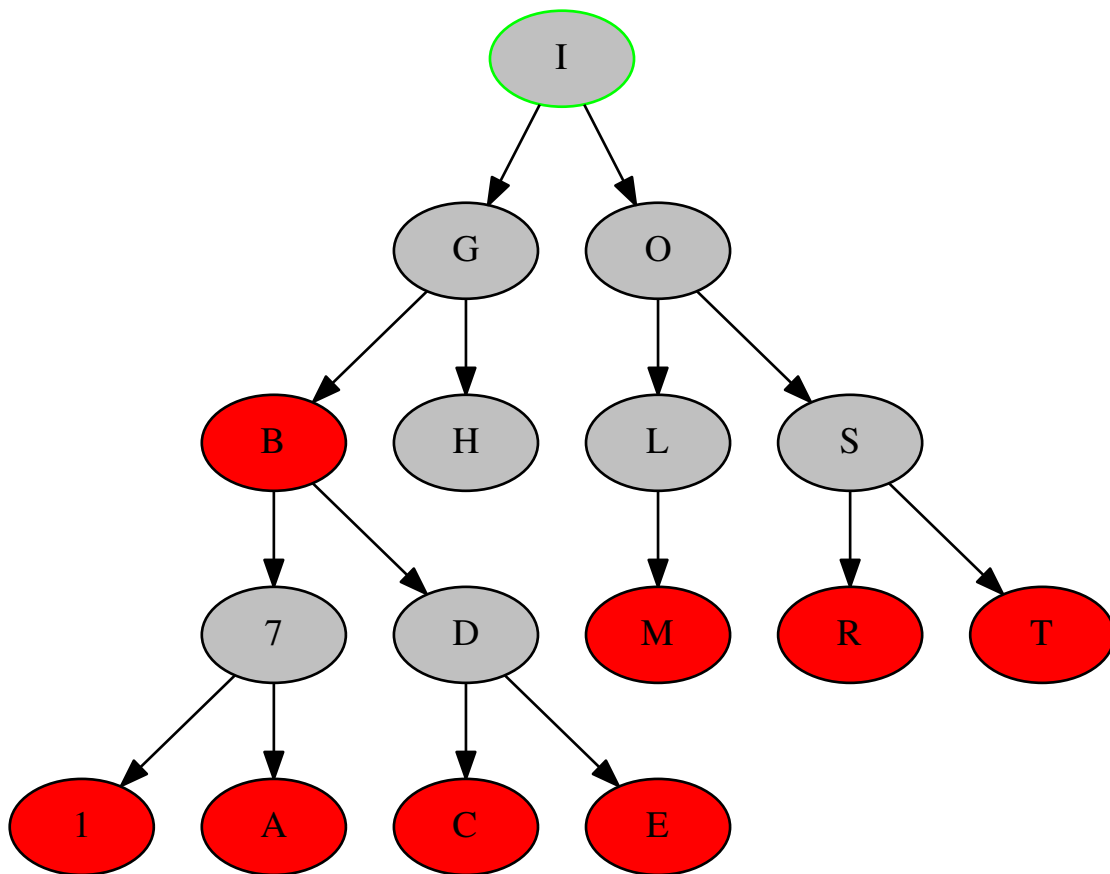
ALGORITHMS CAMBRIDGE SL71

17ABCDEFGHILMORST

Performed right rotation



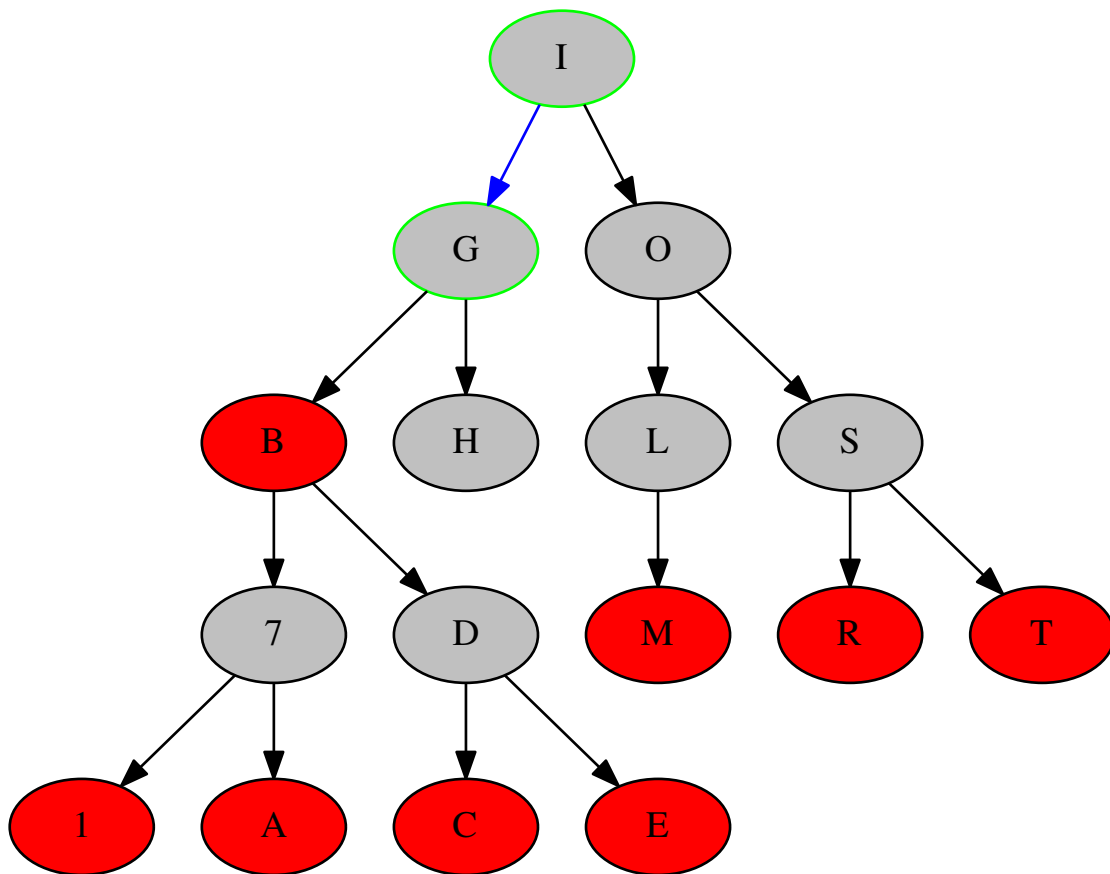
ALGORITHMS CAMBRIDGE SL71
17ABCDEFGHILMORST
Fixing tree - Case 2: Black Uncle: Rotated tree



ALGORITHMS CAMBRIDGE SL715

17ABCDEFGHILMORST

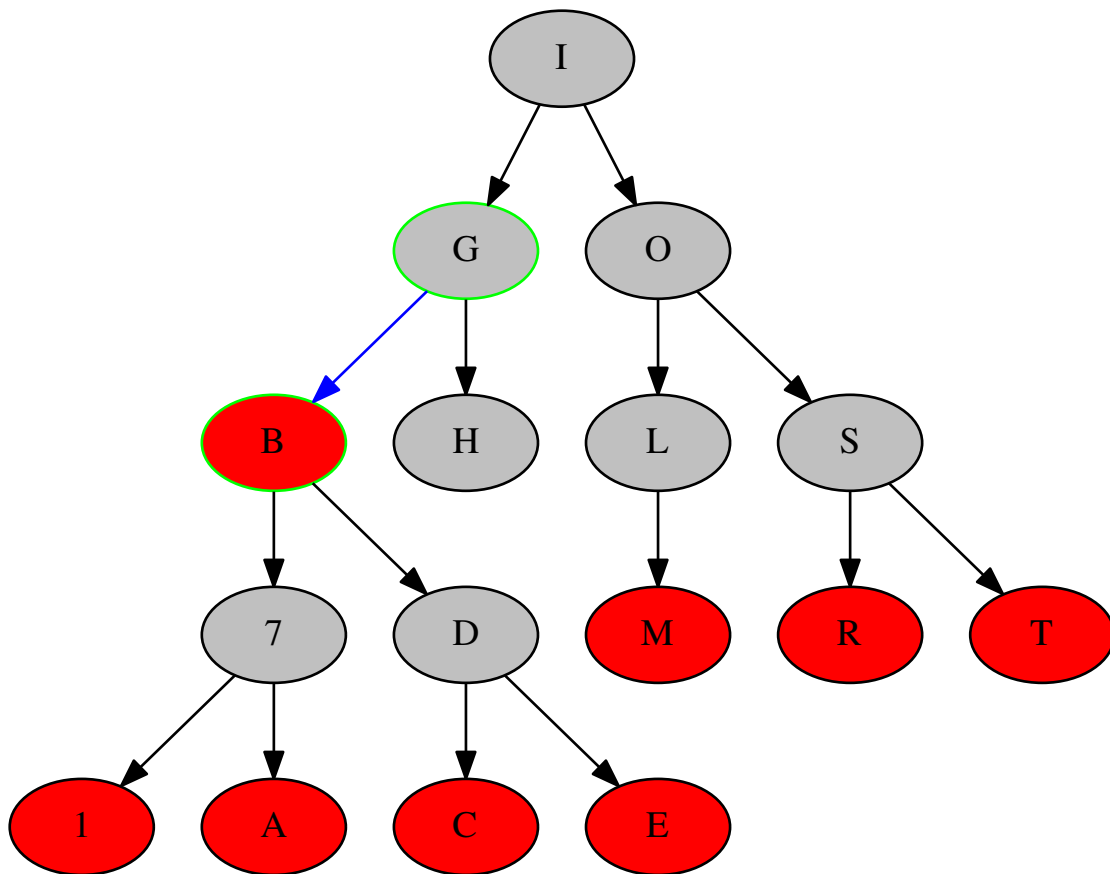
Looking for place to insert 5



ALGORITHMS CAMBRIDGE SL715

17ABCDEFGHILMORST

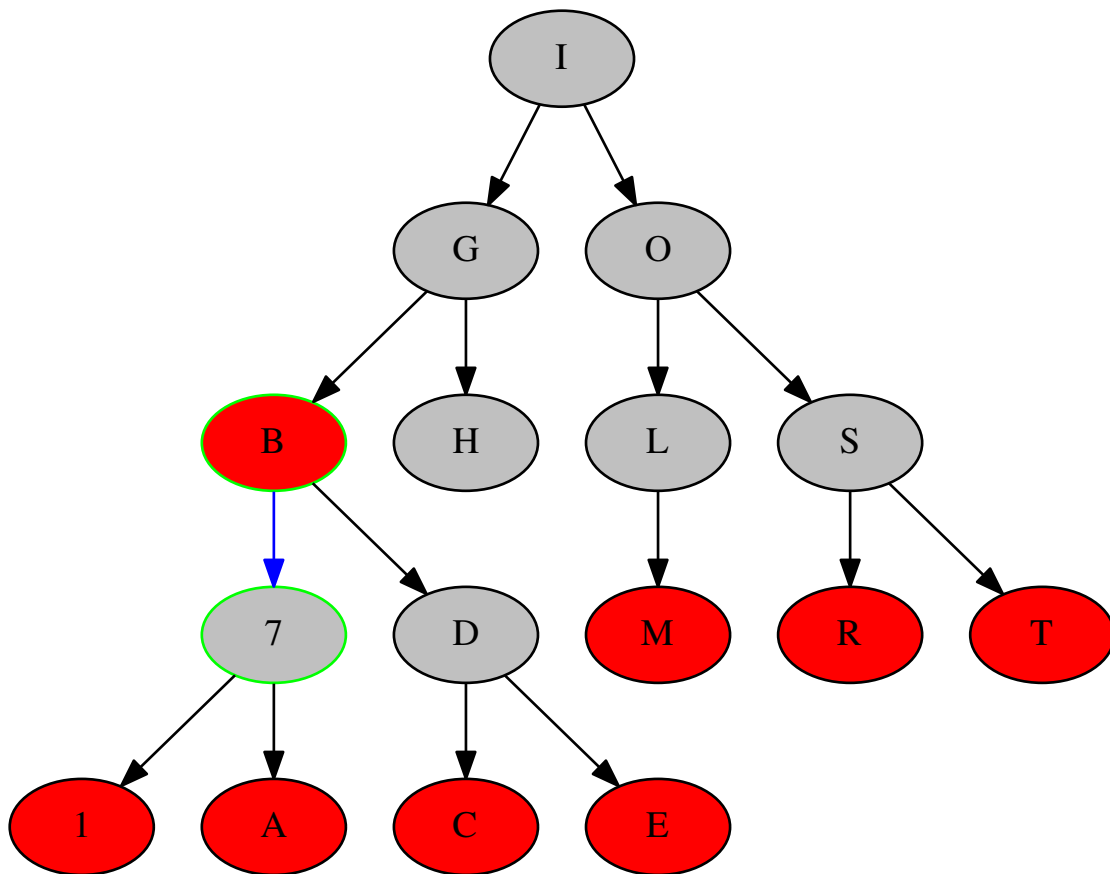
Looking for place to insert 5



ALGORITHMS CAMBRIDGE SL715

17ABCDEFGHILMORST

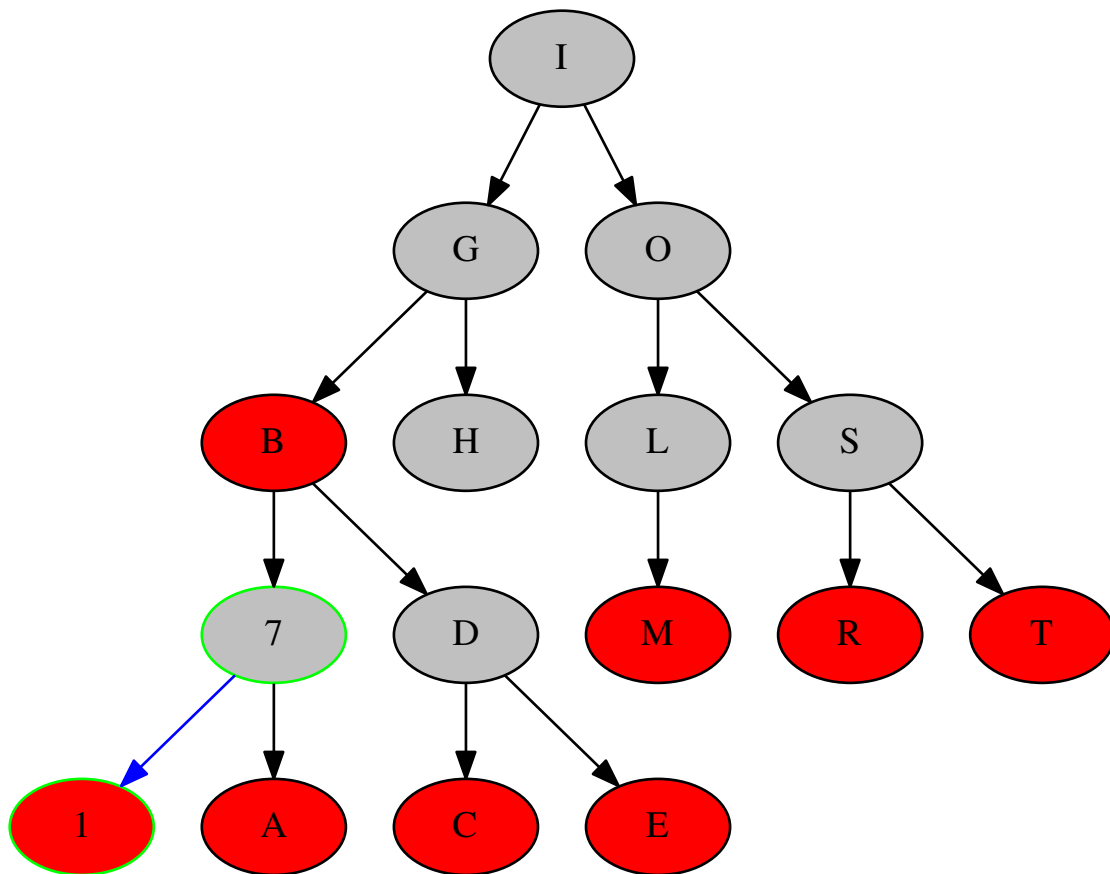
Looking for place to insert 5



ALGORITHMS CAMBRIDGE SL715

17ABCDEFGHILMORST

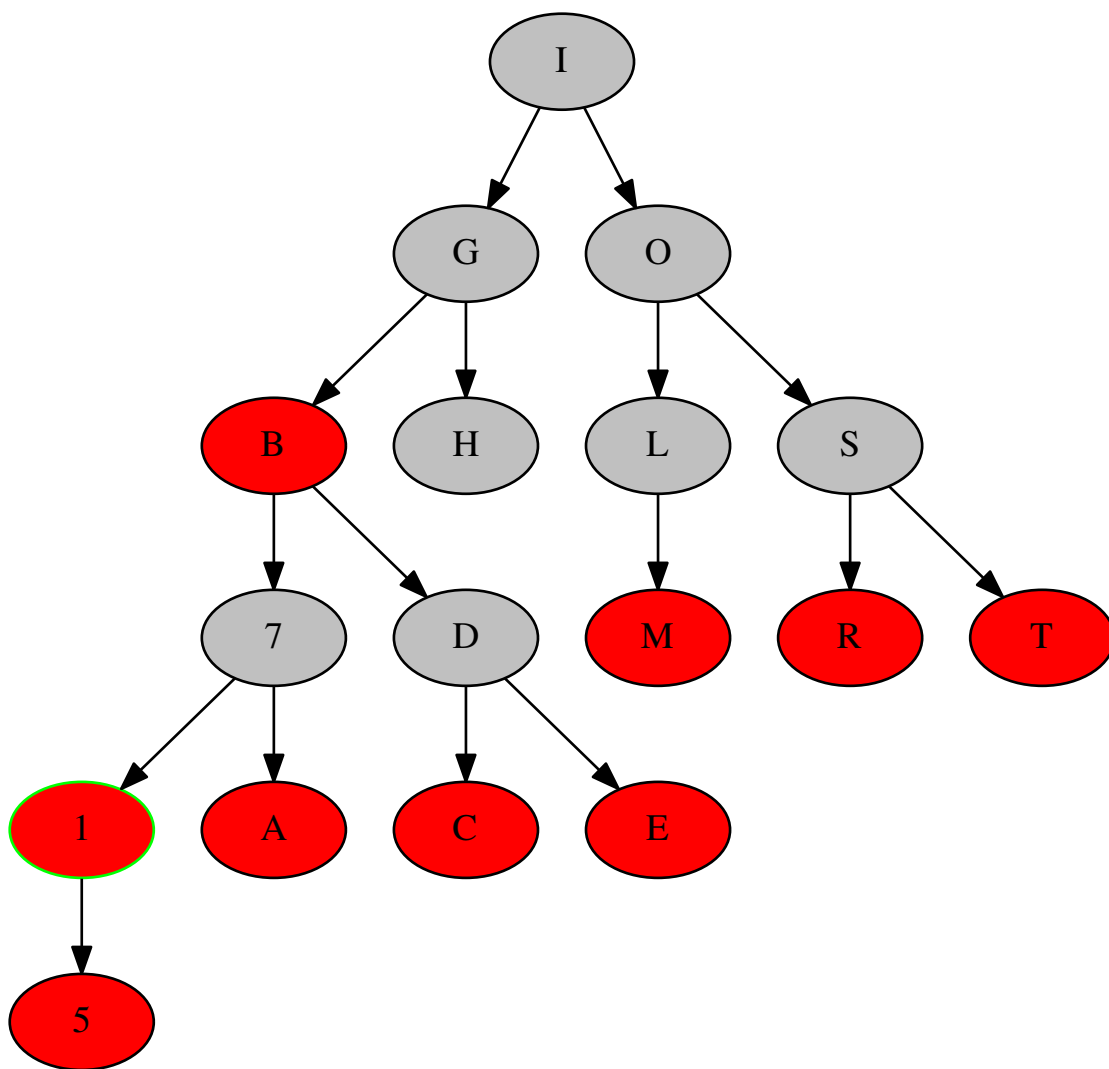
Looking for place to insert 5



ALGORITHMS CAMBRIDGE SL715

17ABCDEGHILMORST

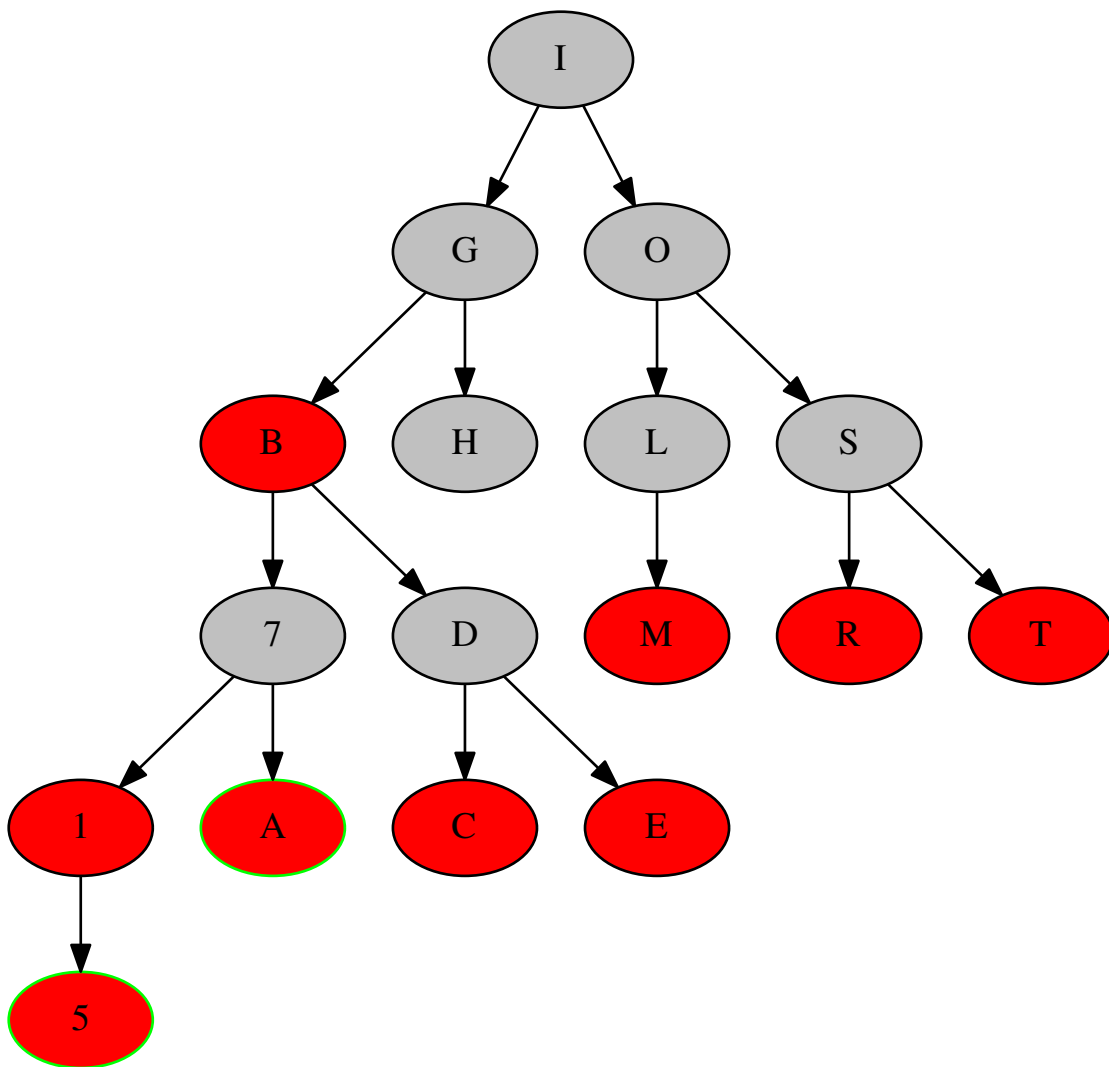
Looking for place to insert 5



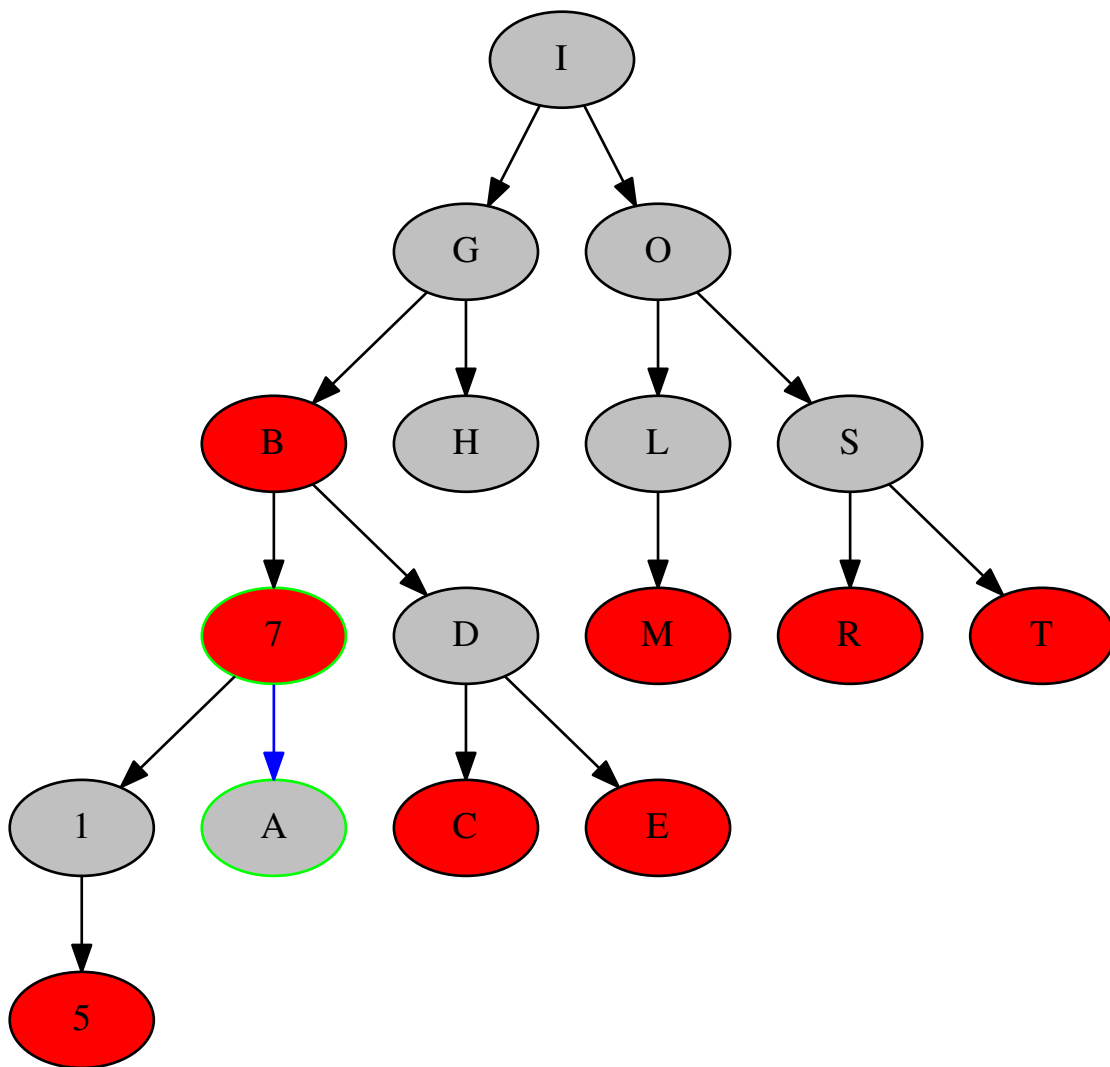
ALGORITHMS CAMBRIDGE SL715

157ABCDEFGHILMORST

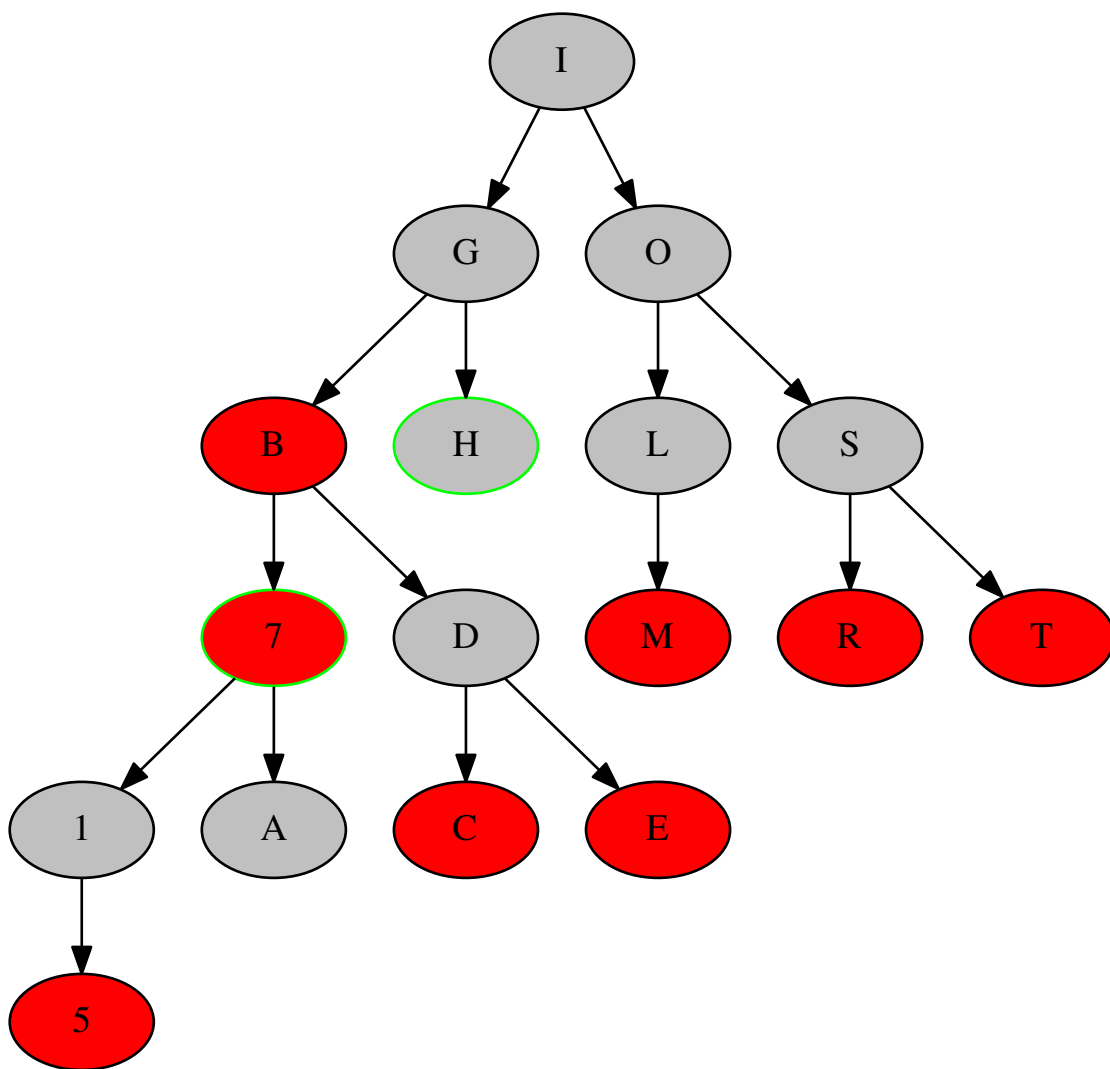
Inserted 5



ALGORITHMS CAMBRIDGE SL715
157ABCDEFGHILMORST
Fixing tree - Case 1: Red Uncle: Recoloring nodes



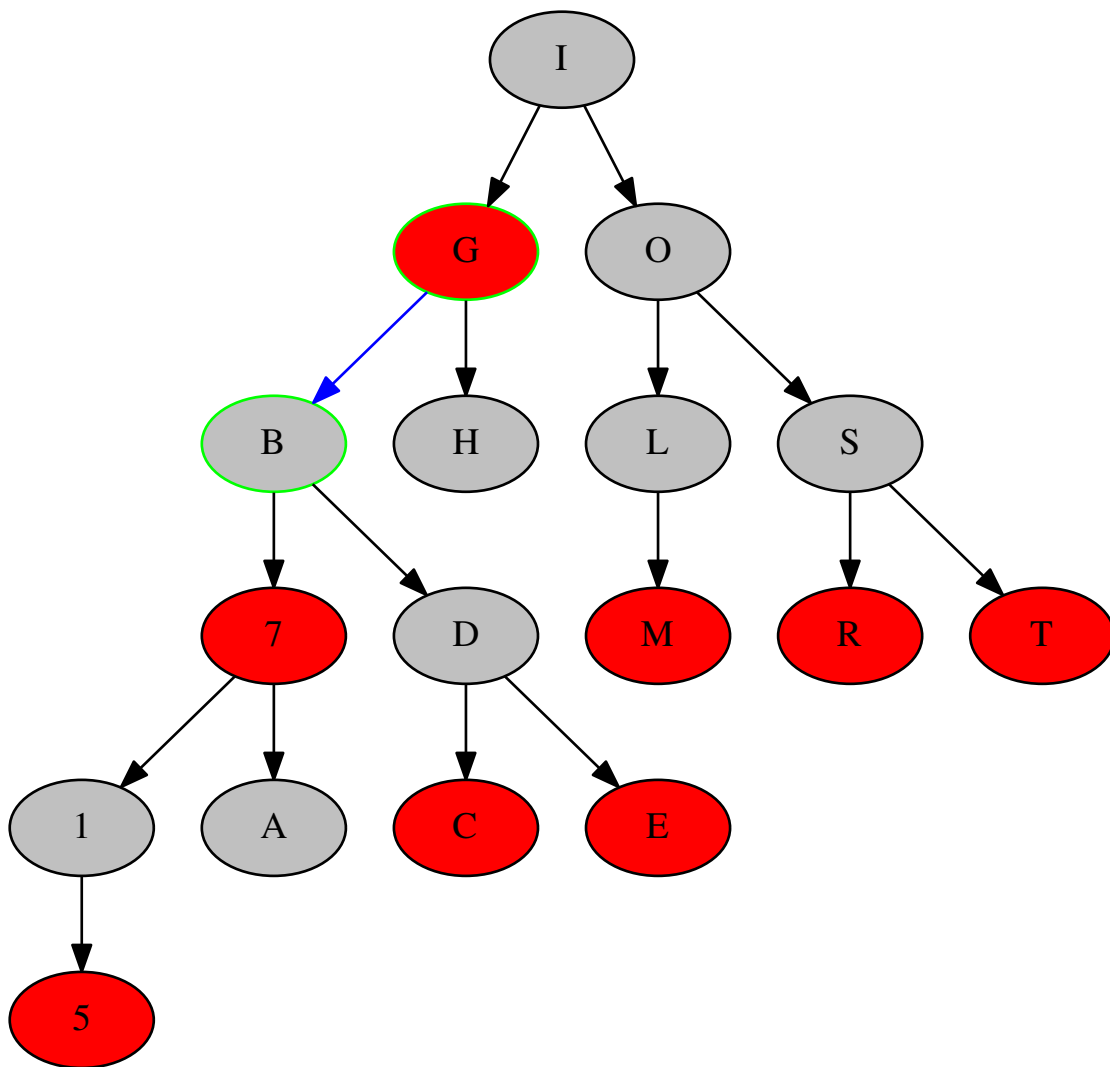
ALGORITHMS CAMBRIDGE SL715
157ABCDEFGHILMORST
Fixing tree - Case 1: Red Uncle: Recolored nodes



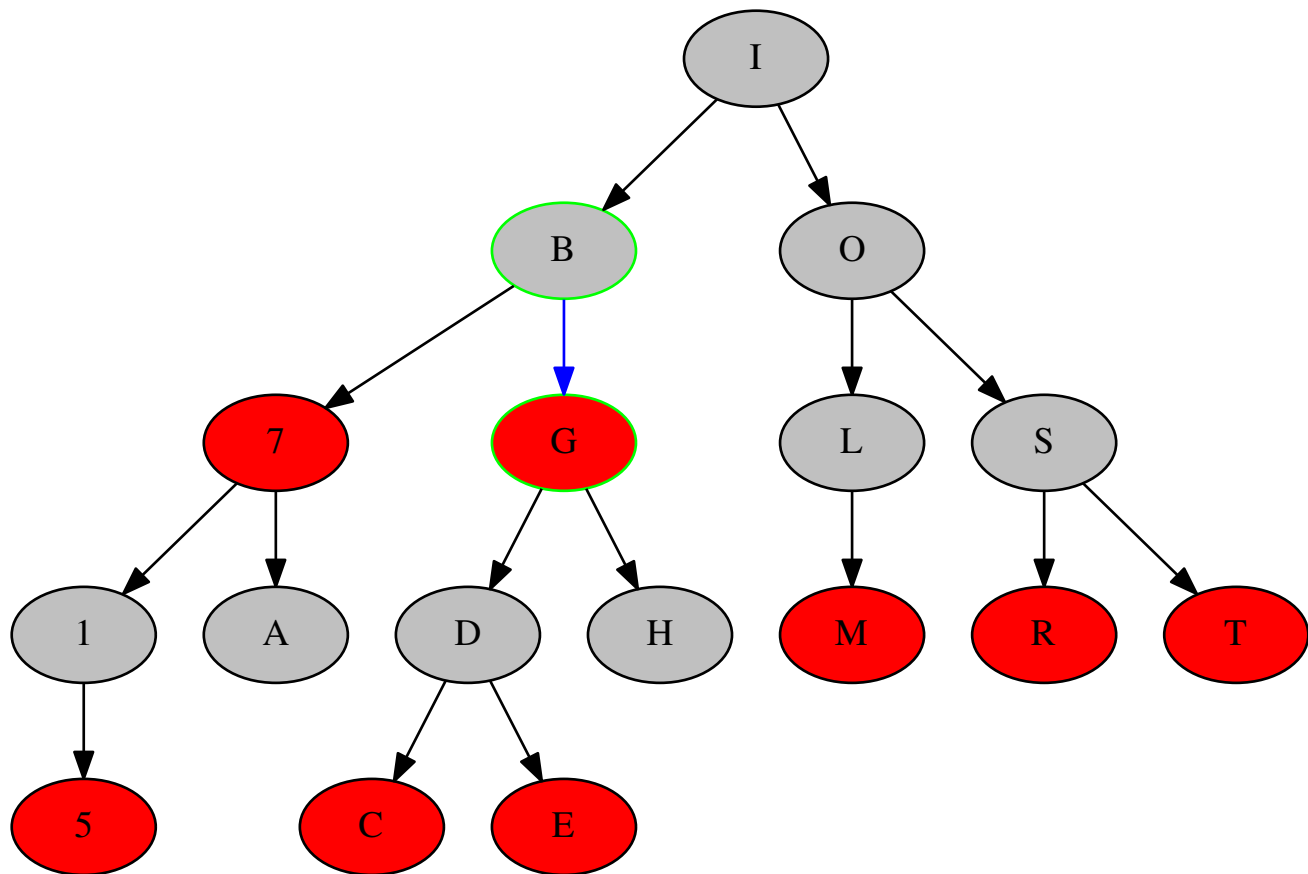
ALGORITHMS CAMBRIDGE SL715

157ABCDEGHILMORST

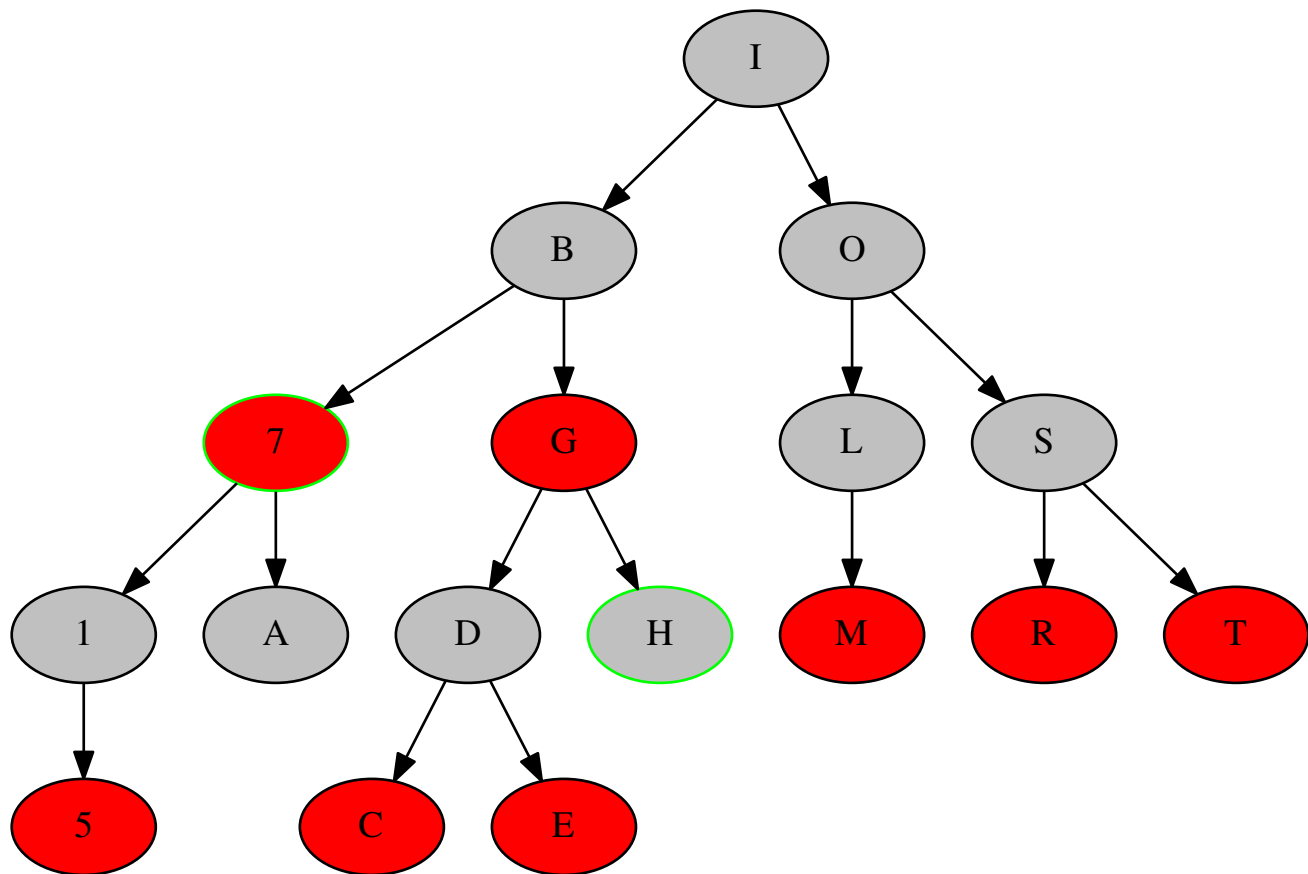
Fixing tree - Case 2: Black Uncle: Rotating tree



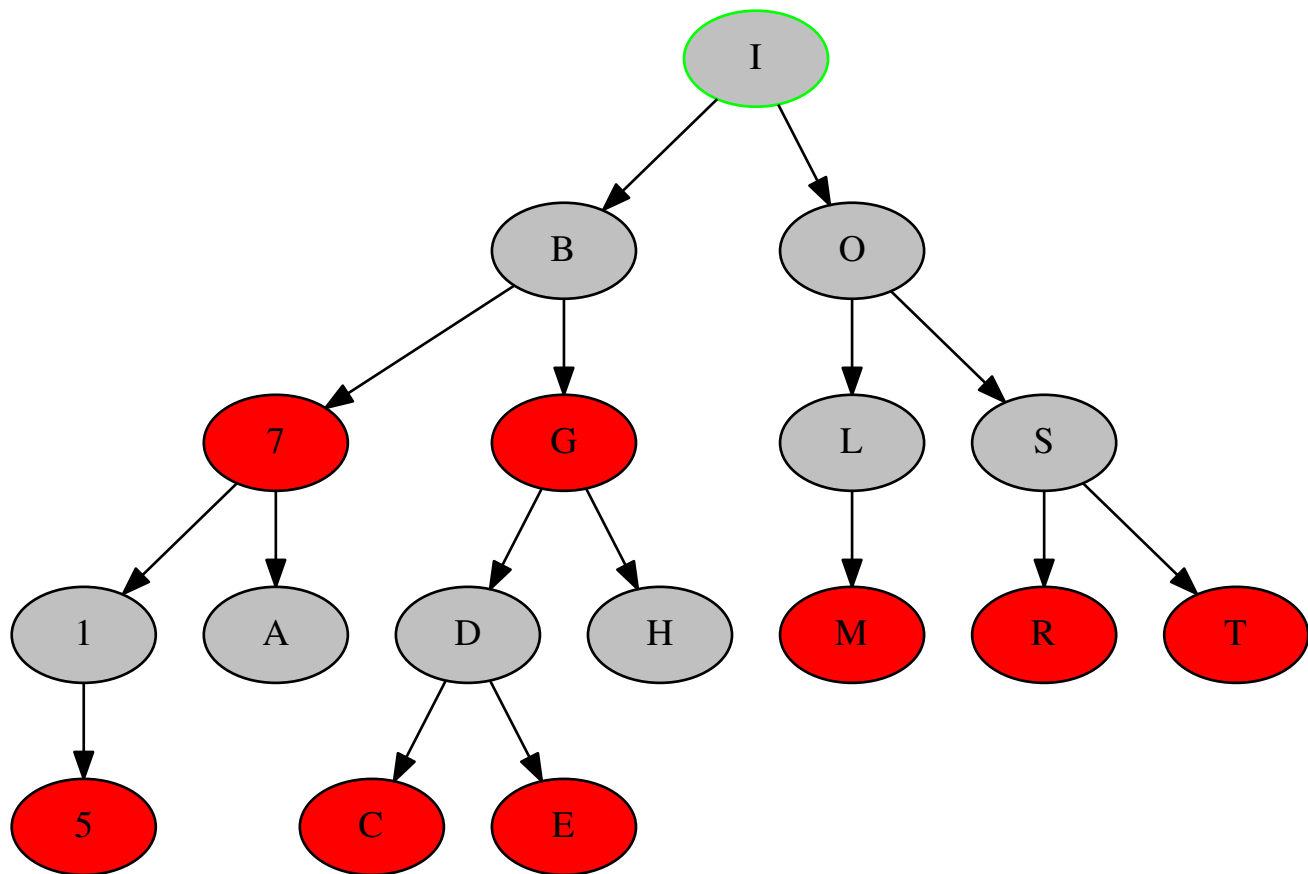
ALGORITHMS CAMBRIDGE SL715
157ABCDEFGHILMORST
Performing right rotation



ALGORITHMS CAMBRIDGE SL715
157ABCDEFGHILMORST
Performed right rotation



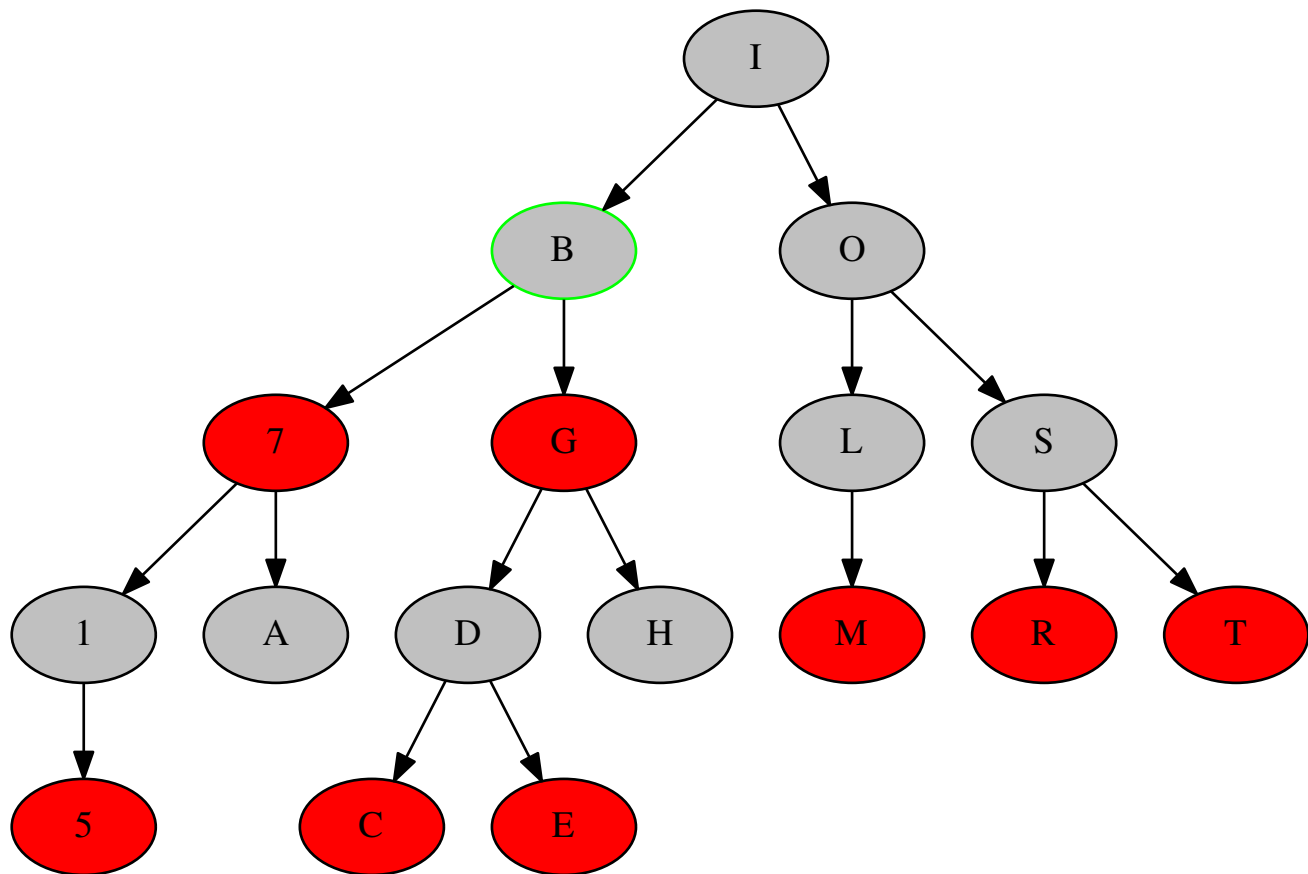
ALGORITHMS CAMBRIDGE SL715
157ABCDEFGHILMORST
Fixing tree - Case 2: Black Uncle: Rotated tree



ALGORITHMS CAMBRIDGE SL715 ?A

157ABCDEFGHILMORST

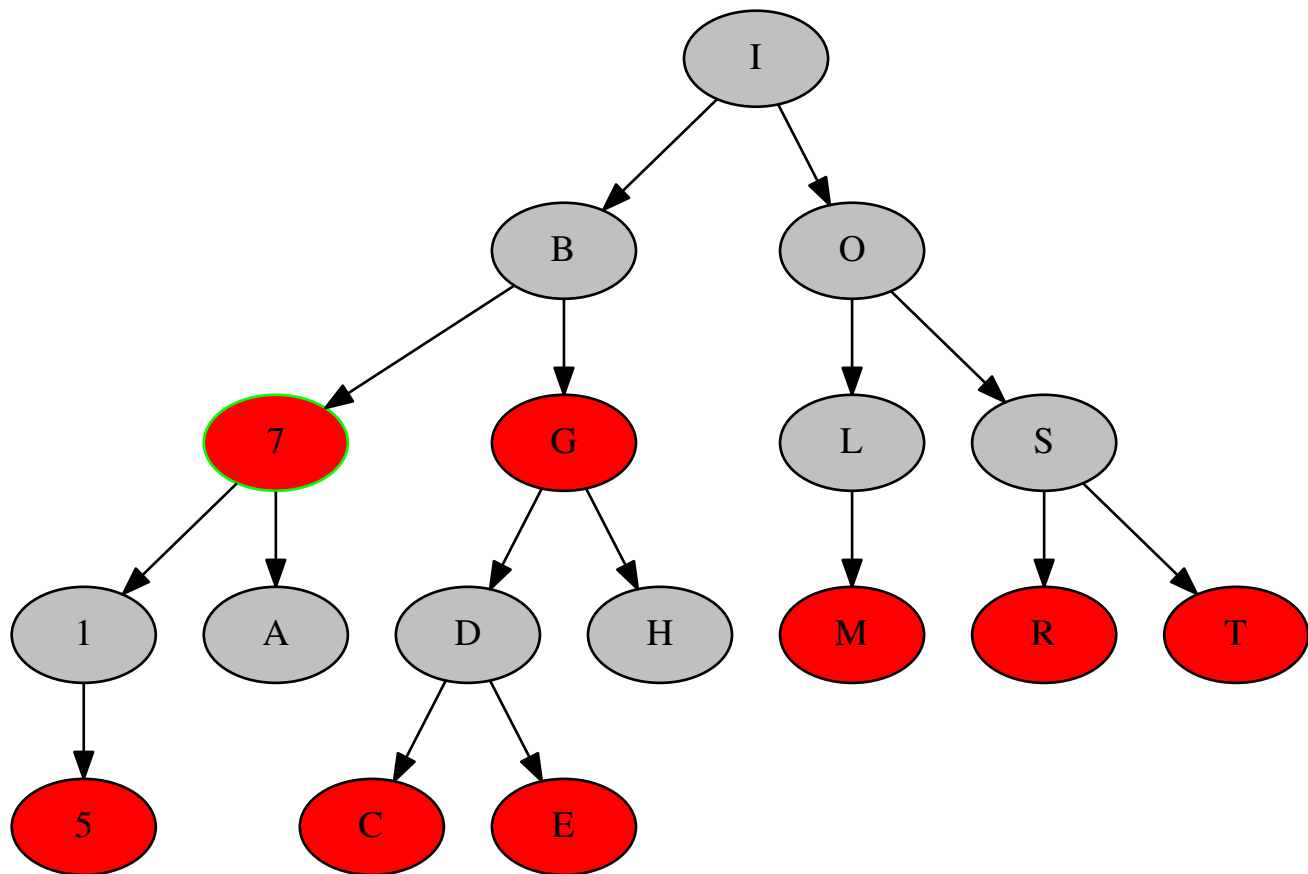
Searching for A



ALGORITHMS CAMBRIDGE SL715 ?A

157ABCDEFGHILMORST

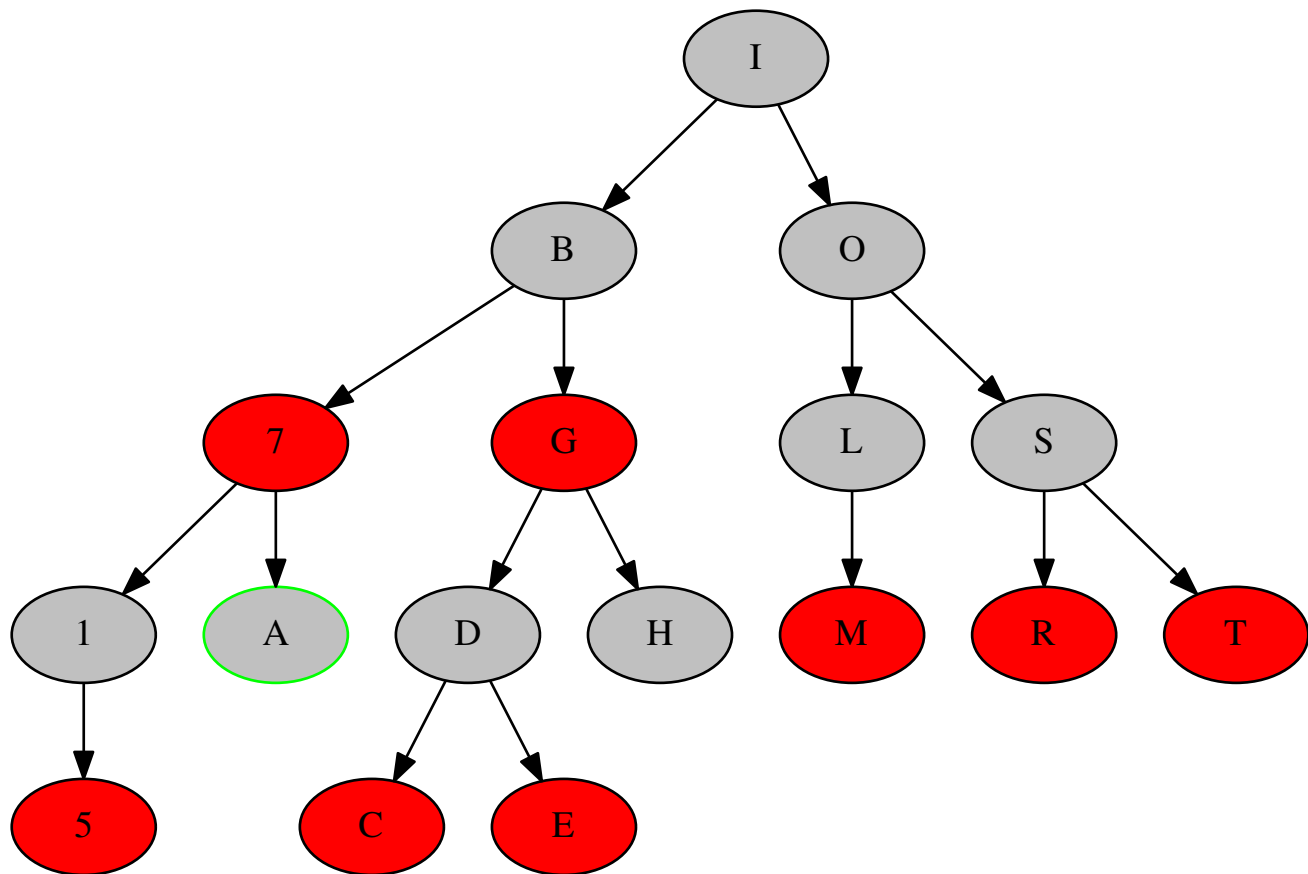
Searching for A



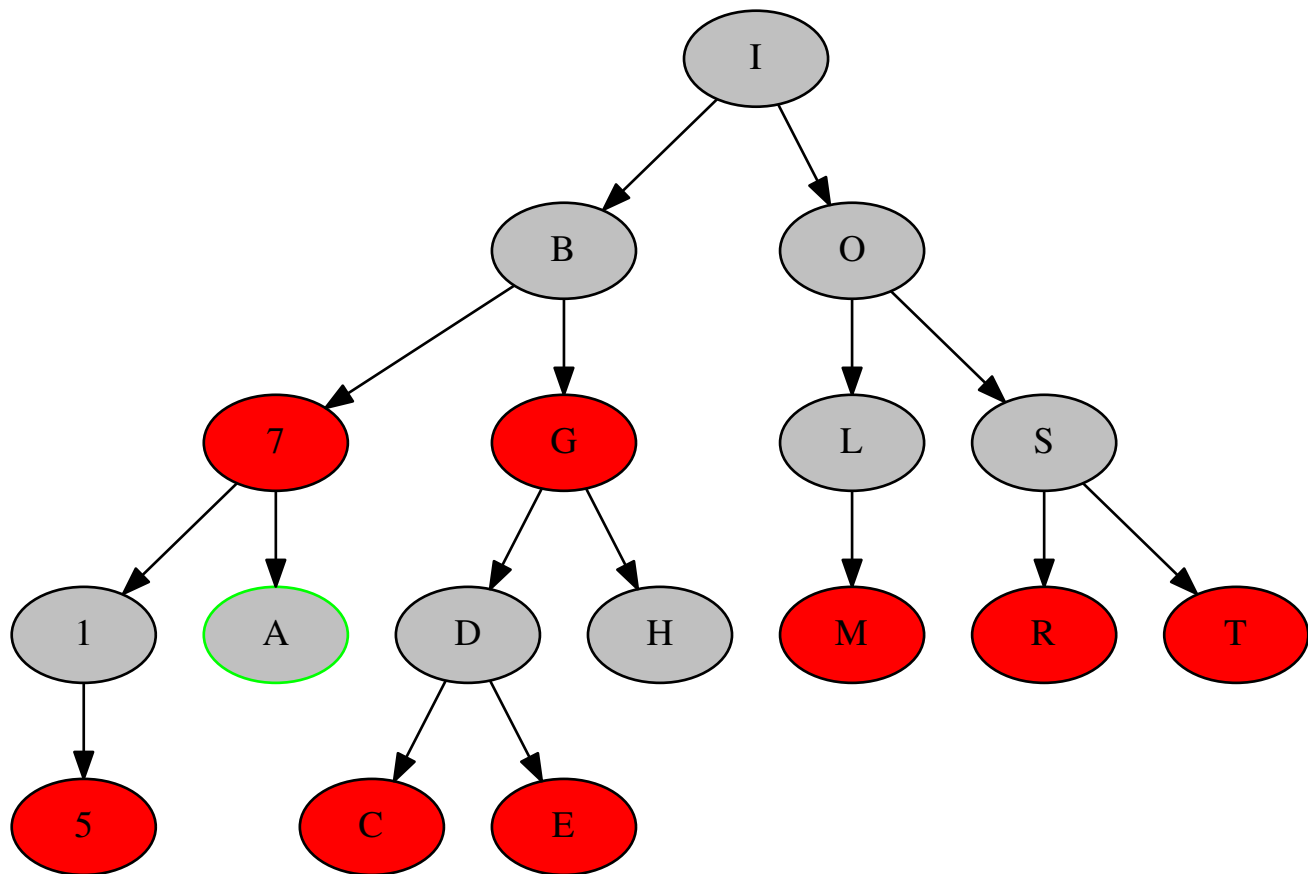
ALGORITHMS CAMBRIDGE SL715 ?A

157ABCDEFGHILMORST

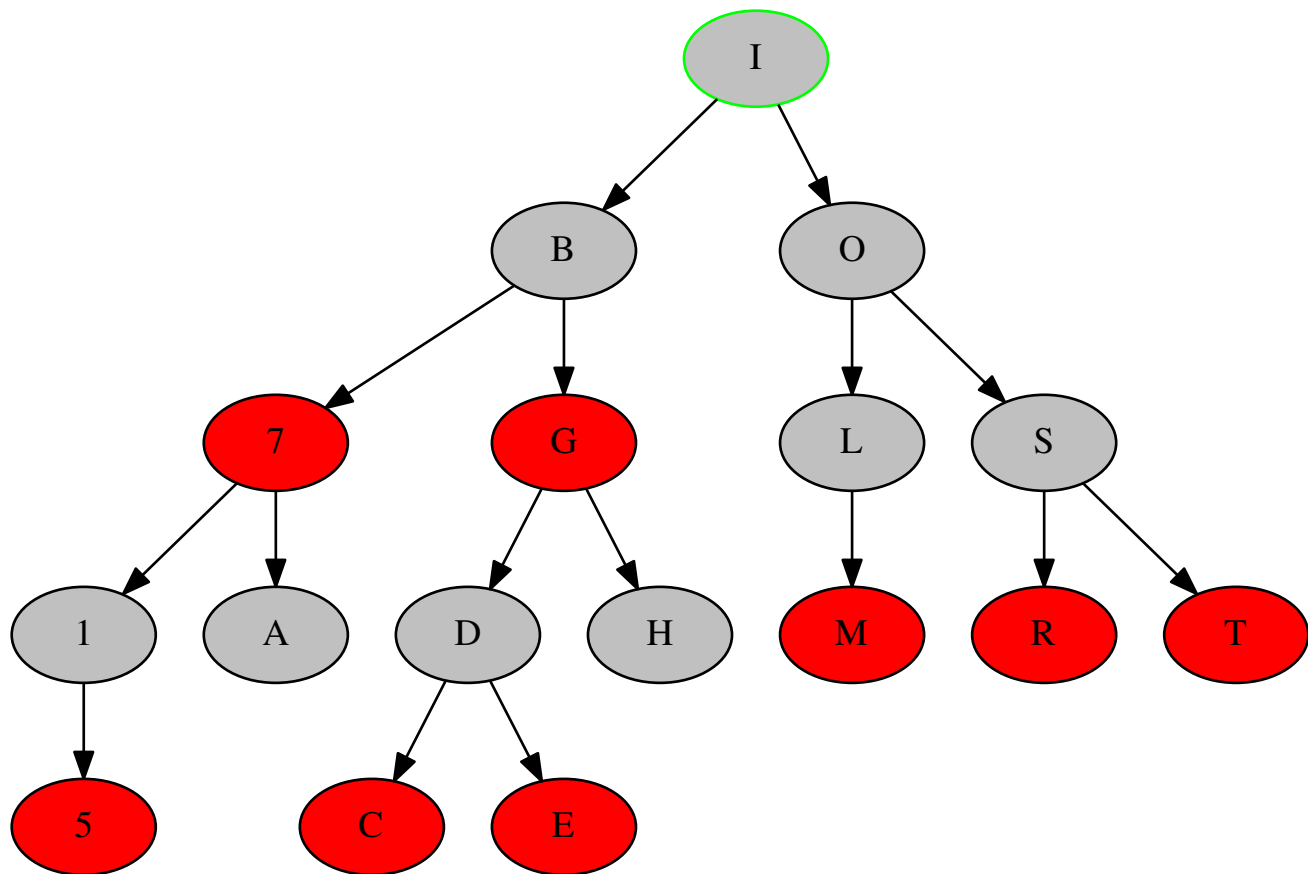
Searching for A



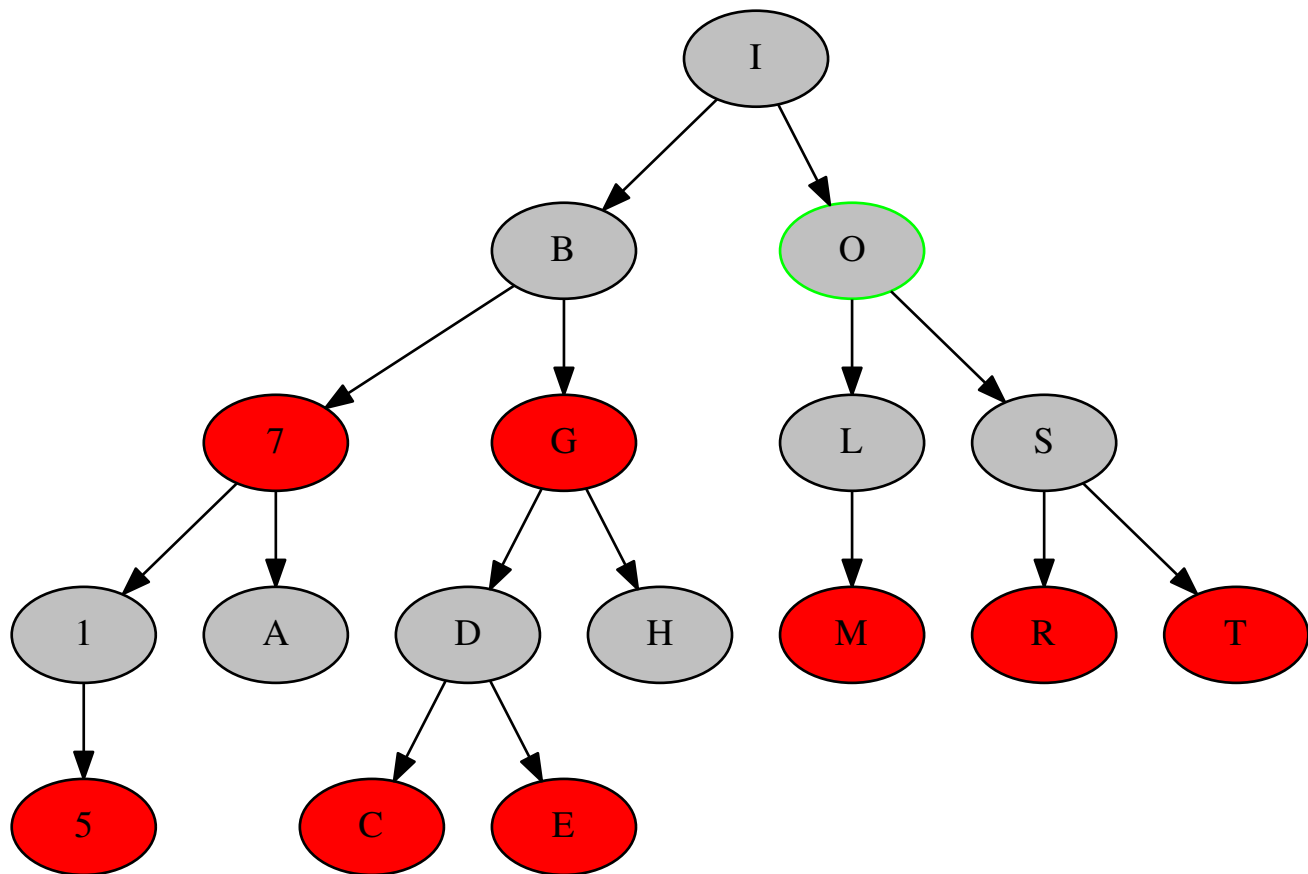
ALGORITHMS CAMBRIDGE SL715 ?A
157ABCDEFGHILMORST
A found



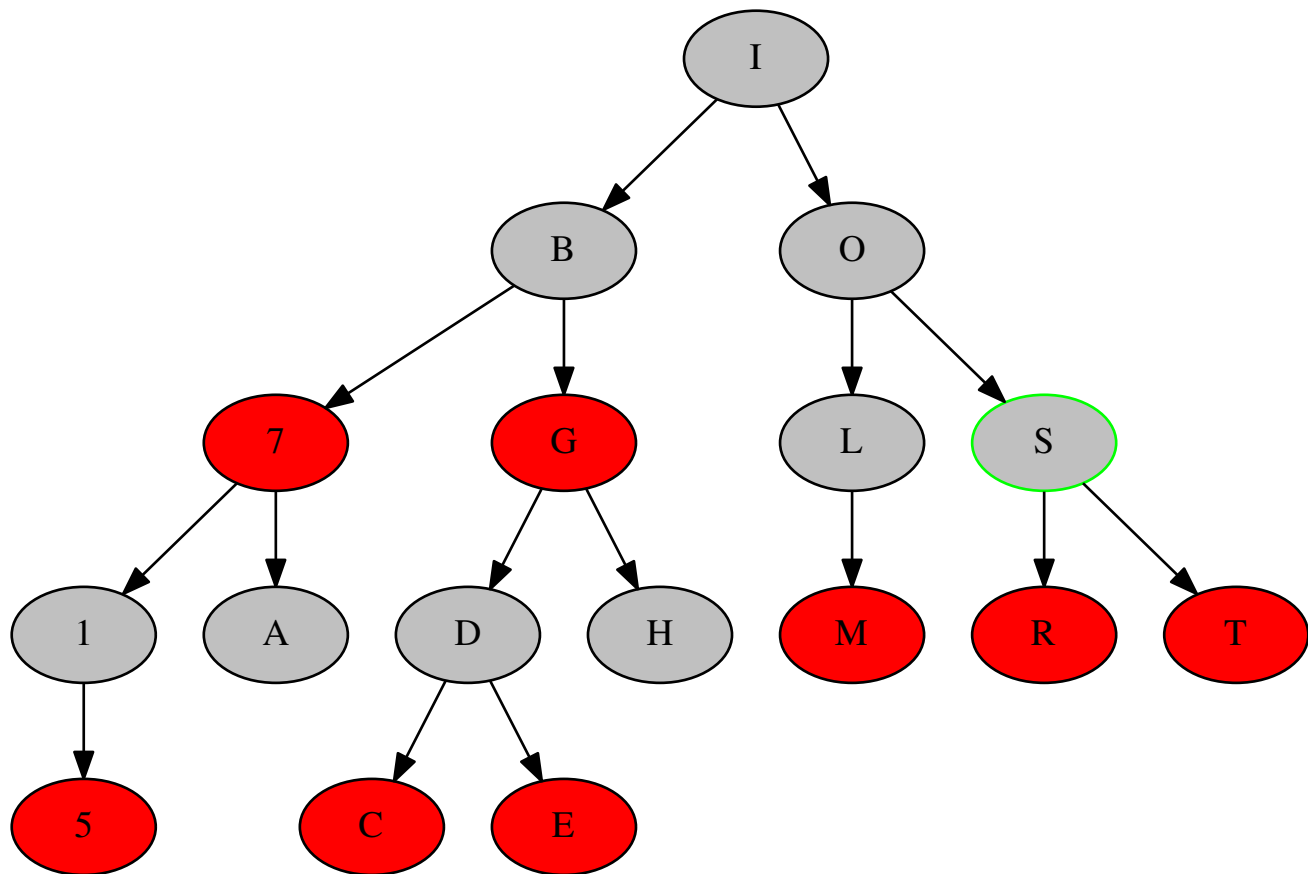
ALGORITHMS CAMBRIDGE SL715 ?A
157ABCDEFGHILMORST
Found A



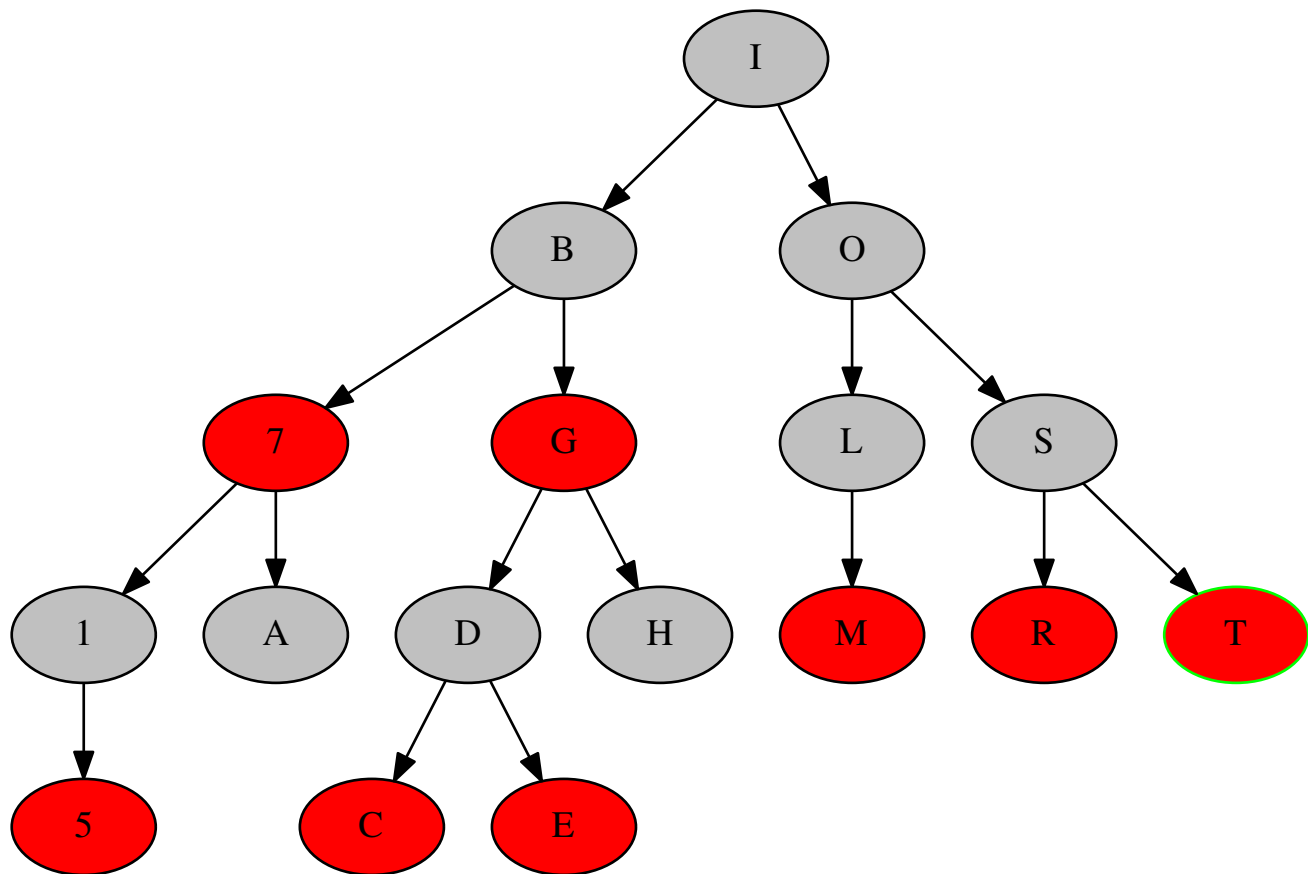
ALGORITHMS CAMBRIDGE SL715 ?A ?Z
157ABCDEFGHILMORST
Searching for Z



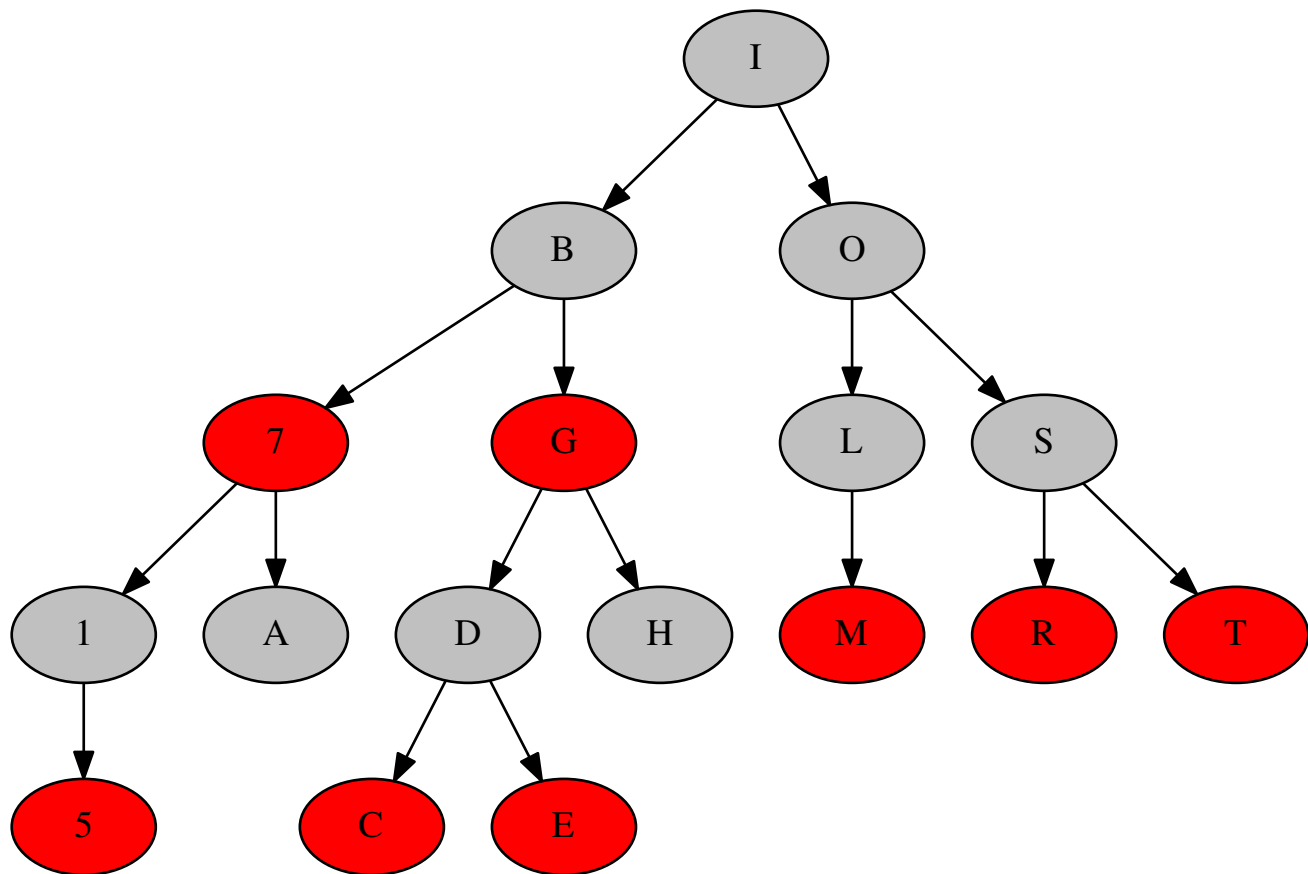
ALGORITHMS CAMBRIDGE SL715 ?A ?Z
157ABCDEFGHILMORST
Searching for Z



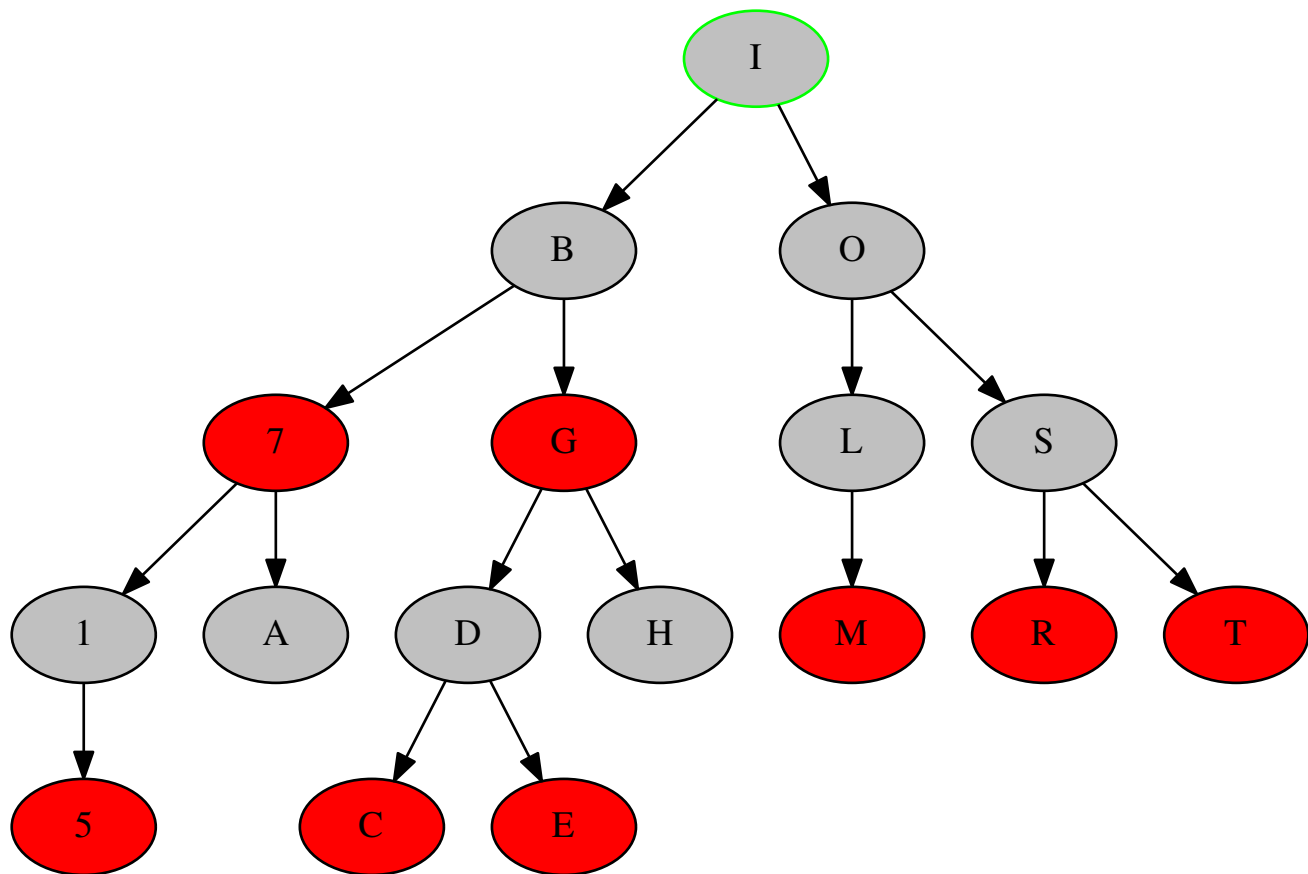
ALGORITHMS CAMBRIDGE SL715 ?A ?Z
157ABCDEFGHILMORST
Searching for Z



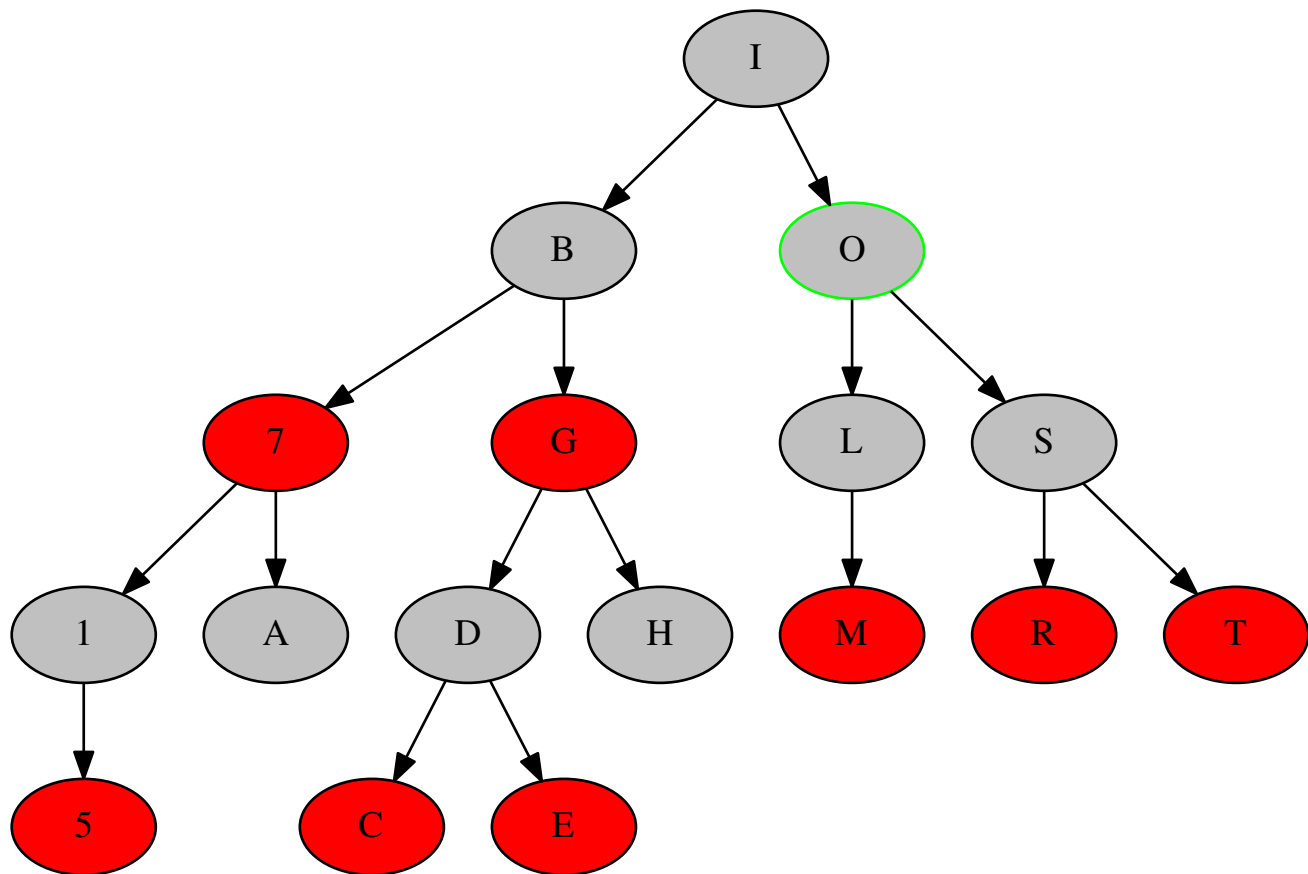
ALGORITHMS CAMBRIDGE SL715 ?A ?Z
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Searching for Z



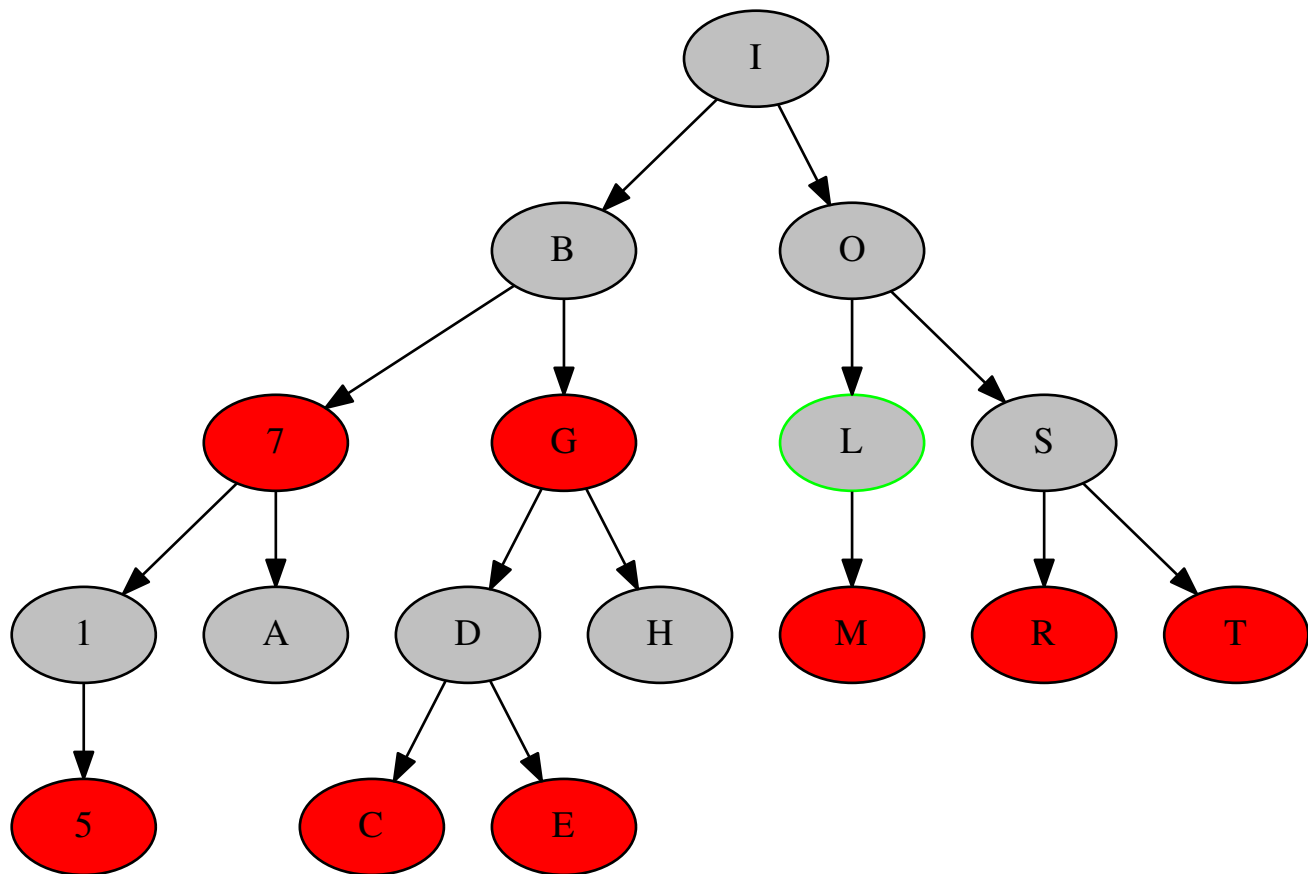
ALGORITHMS CAMBRIDGE SL715 ?A ?Z
157ABCDEFGHILMORST
Z not found



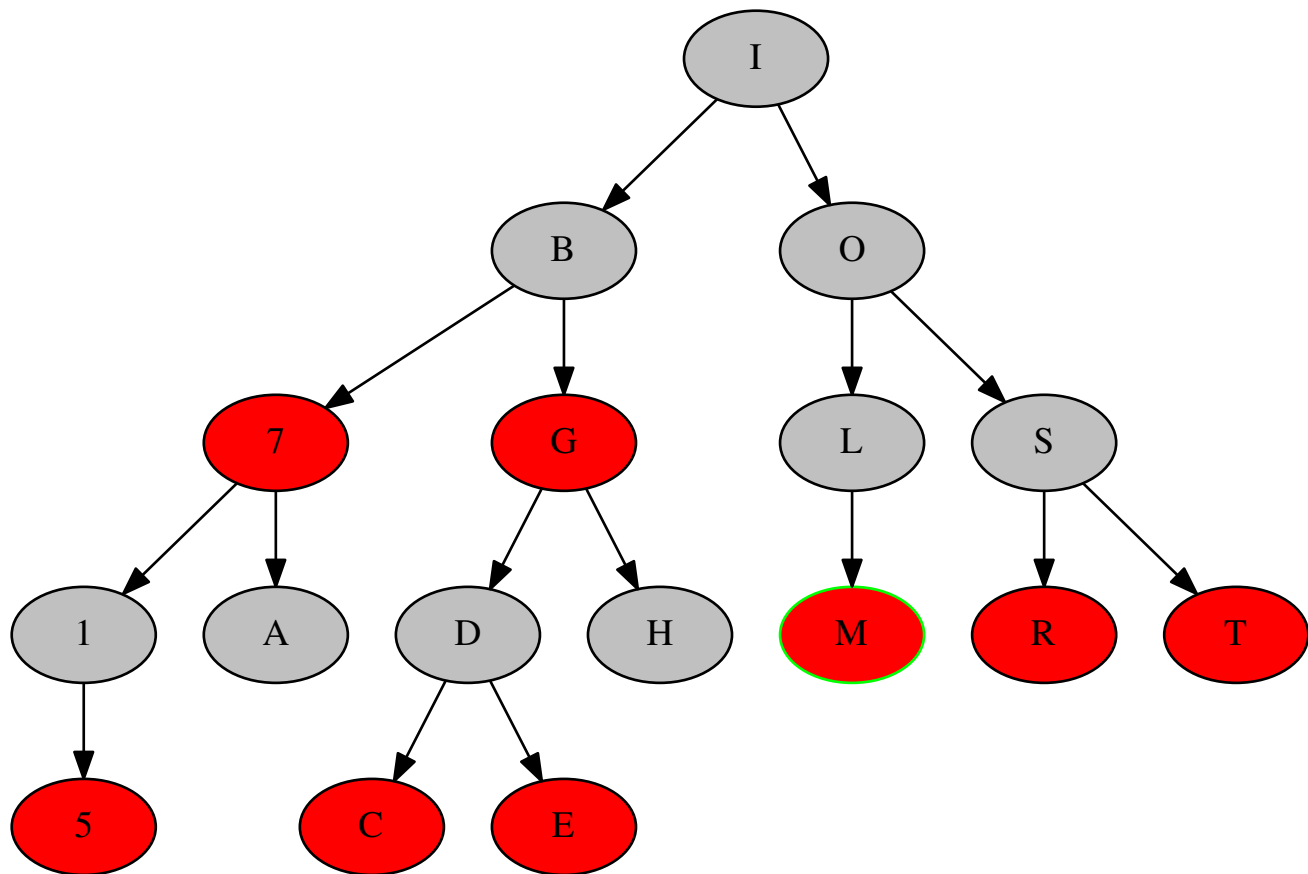
ALGORITHMS CAMBRIDGE SL715 ?A ?Z <M
157ABCDEFGHILMORST
Searching for M



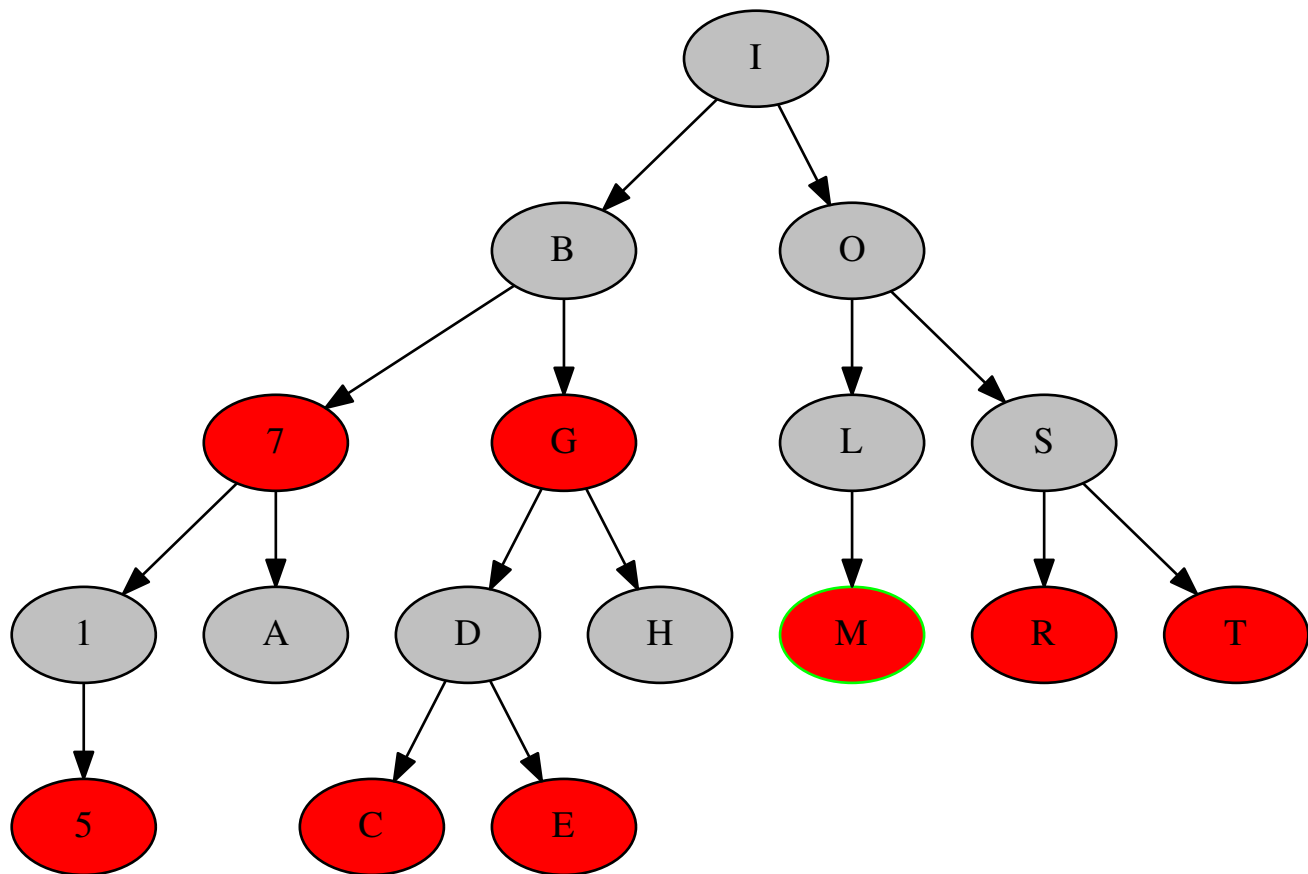
ALGORITHMS CAMBRIDGE SL715 ?A ?Z <M
157ABCDEFGHILMORST
Searching for M



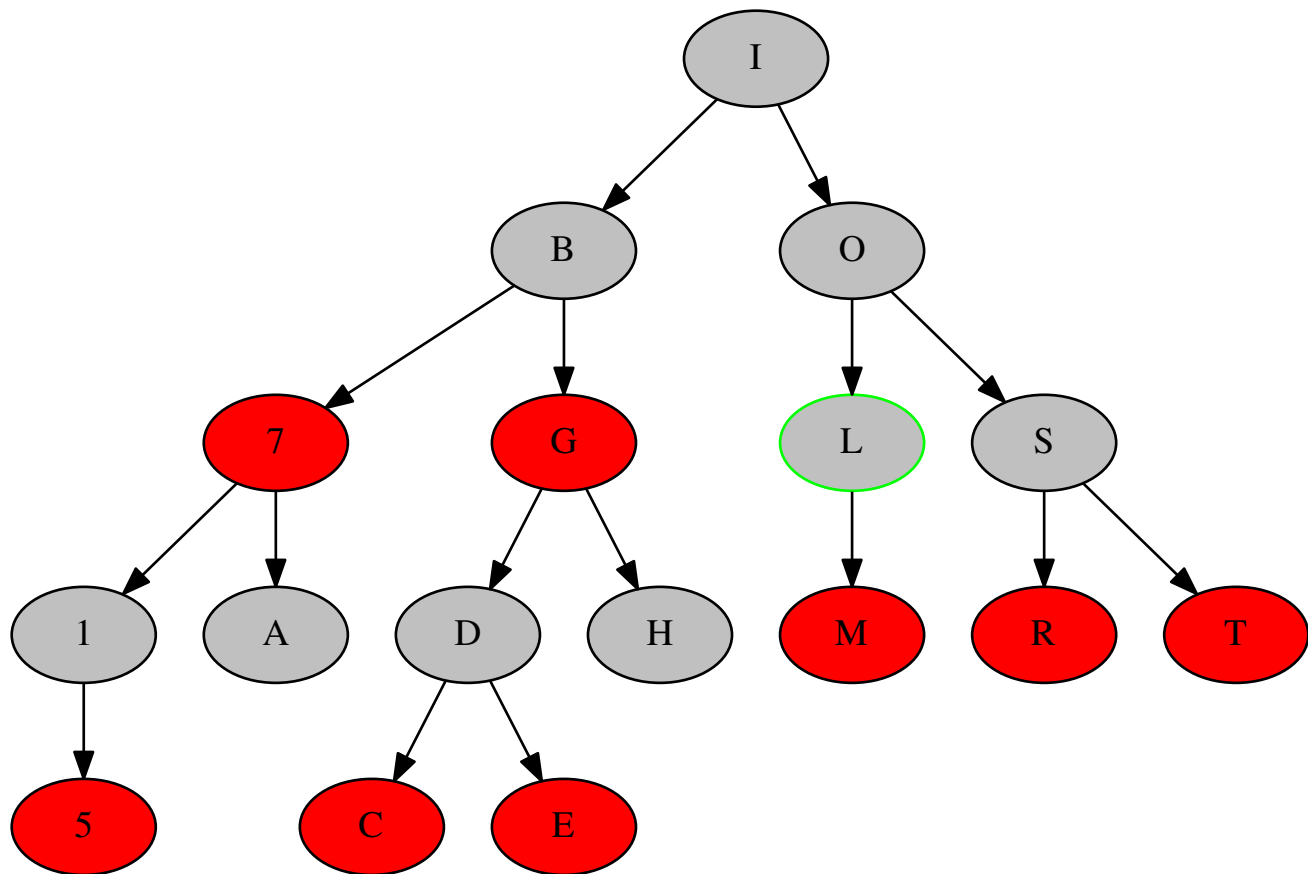
ALGORITHMS CAMBRIDGE SL715 ?A ?Z <M
157ABCDEFGHILMORST
Searching for M



ALGORITHMS CAMBRIDGE SL715 ?A ?Z <M
157ABCDEFGHILMORST
M found



ALGORITHMS CAMBRIDGE SL715 ?A ?Z <M
157ABCDEFGHILMORST
Getting predecessor of M



ALGORITHMS CAMBRIDGE SL715 ?A ?Z <M
157ABCDEFGHILMORST
Predecessor of M is L