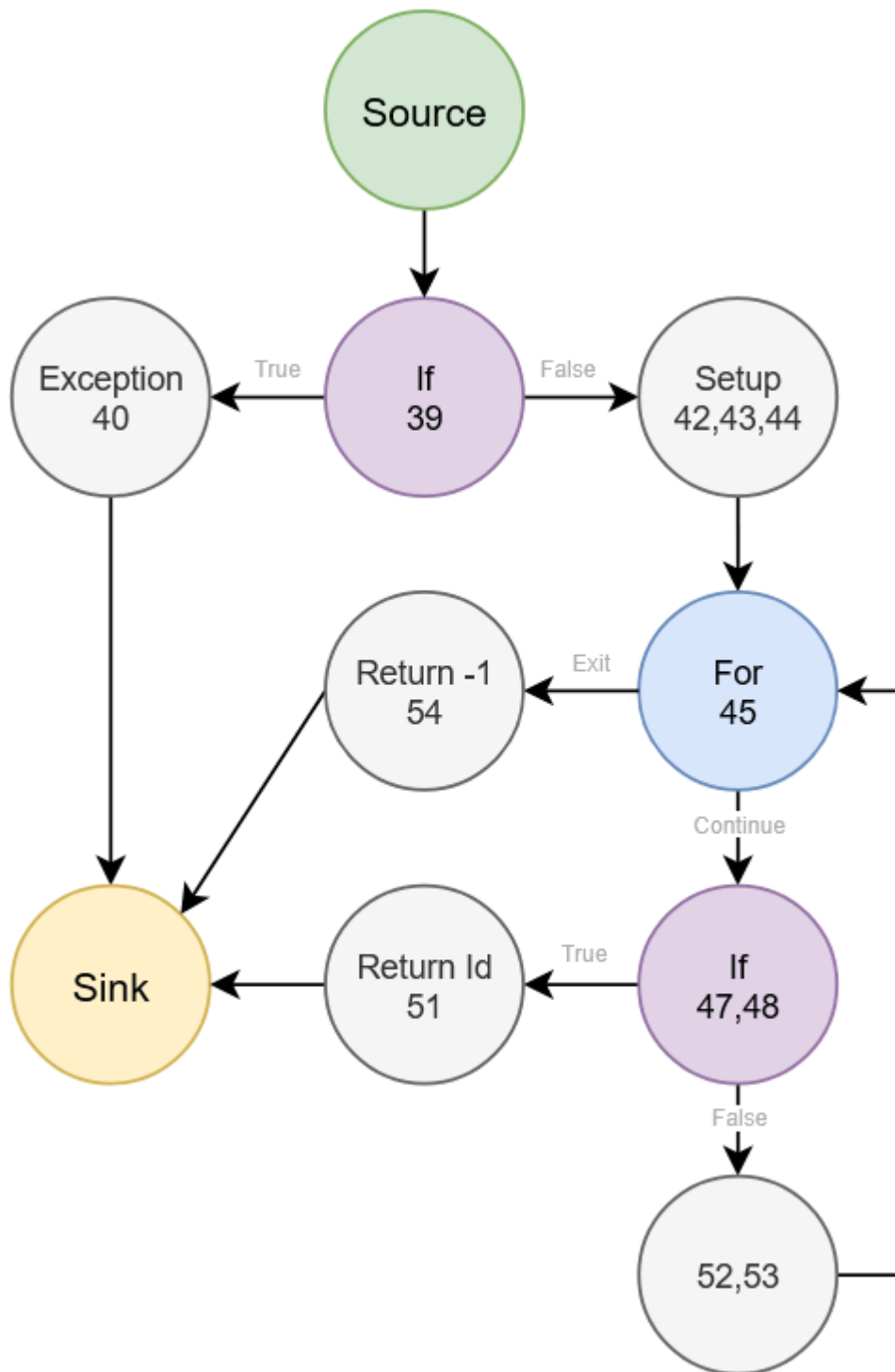


FindAvailableRoom method

DD-path graph



Cyclomatic complexity

1. $C = R + 1$
 - $R = 3$ (Enclosed regions)
 - $C = 3 + 1 = 4$
2. $C = E - N + 2$
 - $E = 12$ (Edges)
 - $N = 10$ (Nodes)
 - $C = 12 - 10 + 2 = 4$
3. $C = 1 + \text{Sum}(\text{outDegree} - 1)$
 - 3 branching/looping constructs + 1
 - $C = 1 + 3 = 4$

Basis paths

1. Invalid date
 - Source -> 39 (True) -> 40 -> Sink
2. No rooms
 - Source -> 39 (False) -> 42,43,44 -> 45 (Exit) -> 54 -> Sink
3. Room found on first iteration
 - Source -> 39 (False) -> 42,43,44 -> 45 (Continue) -> 47,48 (True) -> 51 -> Sink
4. Room not found after checking one room
 - Source -> 39 (False) -> 42,43,44 -> 45 (Continue) -> 47,48 (False) -> 52,53 -> 45 (Exit) -> 54 -> Sink

Truth tables

Multiple conditions #1:

```
startDate <= DateTime.Today || startDate > endDate
```

A || B

Decision ID	A	B	Decision Outcome
D1-1	T	-	T
D1-2	F	T	T
D1-3	F	F	F
D1-4	T	-	T

Multiple conditions #2:

```
startDate < b.StartDate && endDate < b.StartDate || startDate  
> b.EndDate && endDate > b.EndDate
```

A && B || C && D

Decision ID	A	B	C	D	Decision Outcome
D2-1	T	T	-	-	T
D2-2	T	T	-	-	T
D2-3	T	T	-	-	T
D2-4	T	T	-	-	T
D2-5	T	F	T	T	T
D2-6	T	F	T	F	F
D2-7	T	F	F	-	F
D2-8	T	F	F	-	F
D2-9	F	-	T	T	T
D2-10	F	-	T	F	F
D2-11	F	-	F	-	F
D2-12	F	-	F	-	F
D2-13	F	-	T	T	T
D2-14	F	-	T	F	F
D2-15	F	-	F	-	F
D2-16	F	-	F	-	F

Test cases

Using MCC, path coverage, and implicitly loop coverage (0 and 1 iteration).

Test case ID	startDate	endDate	Setup (Room and Booking)	Expected output	Covers
TC1	Today - 1	Today + 1	-	Argument Exception	Path 1, D1-1
TC2	Today + 2	Today + 1	-	Argument Exception	Path 1, D1-2
TC3	Today + 1	Today + 5	No rooms	-1	Path 2, D1-3, 0 loop
TC4	Today + 1	Today + 5	Room with booking starting Today + 10 and ending Today + 20	Room ID	Path 3, D1-3, D2-1
TC5	Today + 9	Today + 19	Room with booking starting Today + 10 and ending Today + 20	-1	Path 4, D1-3, D2-7
TC6	Today + 21	Today + 25	Room with booking starting Today + 10 and ending Today + 20	Room ID	D1-3, D2-9
TC7	Today + 11	Today + 21	Room with booking starting Today + 10 and ending Today + 20	-1	D1-3, D2-11