int randFive() {  
 return Random().nextInt(5) + 1;  
}

int randSevenByFive() {  
 int v = 21;  
 while(v > 20)  
 v = randFive() + randFive() \* 5 - 6;  
 return 1 + v % 7;

}  
--------------------------------------------------------------------------------------

randFive() Function

This function is a random number generation function that produces numbers between 1 and 5 with equal probability.

We need to implement a function that produces numbers between 1 to 7 with equal probability using this function.

randSevenByFive() Function

This function is a random number generation function that produces numbers between 1 to 7 with equal probability using **randFive()** function.

***Let’s see how randSevenByFive() function returns number between 1 to 7 with equal probability from randFive().***

|  |  |
| --- | --- |
| Expression | Return Value |
| randFive() | 1, 2, 3, 4, 5 (with equal probability) |
| randFive() \* 5 | 5, 10, 15, 20, 25 (with equal probability) |
| randFive() + randFive() \* 5 | 6, 7, 8, ..., 28, 29, 30 (with equal probability) |
| randFive() + randFive() \* 5 - 6 | 0, 1, 2, ..., 22, 23, 24 (with equal probability) |

And then

**wile (v>20)** clause restricts values from 0 to 20.

So we’ll get numbers between 0 to 20 with equal probability.

And **V % 7** => returns numbers between 0 to 6 with equal probability

And **V % 7 + 1** => returns numbers between 1 to 7 with equal probability

|  |  |
| --- | --- |
| Expression | Return Value |
| While(v > 20) | 0, 1, 2, ..., 18, 19, 20 (with equal probability) |
| V % 7 | 0, 1, 2, 3, 4, 5, 6 (with equal probability) |
| V % 7 + 1 | 1, 2, 3, 4, 5, 6, 7 (with equal probability) |