

Case Study 1; Task 4: A game of craps

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Code of the game + explanation (as comments in the code):

```
play_craps <- function() {  
  # at first a random number between 1 & 6.99 is selected, using the floor-  
  # function, an random integer between 1 & 6 is created  
  first_throw <- floor(runif(1, min=1, max=6.99))  
  # using a if/else if/else-query, it is determined if the number results in an  
  # instant win/lose or if the game need to be played further  
  if (first_throw == 6) {  
    print("WoW a six! You won the game!")  
  }  
  else if (first_throw == 1) {  
    print("Unlucky, a 1! You lose, try again!")  
  }  
  else {  
    cat("Your number is", first_throw, "- try to throw it again within 3 tries!\n")  
    # A for-loop is now used to simulate the next throws  
    for (i in 1:3) {  
      next_throw <- floor(runif(1, min=1, max=6.99))  
      cat("Throwing dice... you got a", next_throw, "\n")  
      # if the throw is identical to the first one, the game is won & the for-  
      # loop is ended  
      if (next_throw == first_throw) {  
        cat("Nice! You managed to repeat your number on try No.", i, "- You win!")  
        break  
      }  
      # if the throw is not identical to the first one, the game continues  
      else if (i != 3) {  
        cat("Not quite the same, you have", 3-i, "tries left.\n")  
      }  
    }  
    # if the for loop is broken and the game has not been won, the game is lost &  
    # an according message is displayed  
    if (next_throw != first_throw) {  
      print("Unlucky, you could not repeat your number within 3 throws. You lose, try again!")  
    }  
  }  
}
```

Using the function with the different possible outcomes:

a) Getting a 6 and winning instantly:

```
## [1] "WoW a six! You won the game!"
```

b) Getting a 1 and losing instantly:

```
## [1] "Unlucky, a 1! You lose, try again!"
```

c) Playing the full game and winning:

```
## Your number is 2 - try to throw it again within 3 tries!  
## Throwing dice... you got a 5  
## Not quite the same, you have 2 tries left.  
## Throwing dice... you got a 4  
## Not quite the same, you have 1 tries left.  
## Throwing dice... you got a 2  
## Nice! You managed to repeat your number on try No. 3 - You win!
```

d) Playing the full game and losing:

```
## Your number is 2 - try to throw it again within 3 tries!  
## Throwing dice... you got a 3  
## Not quite the same, you have 2 tries left.  
## Throwing dice... you got a 4  
## Not quite the same, you have 1 tries left.  
## Throwing dice... you got a 6  
## [1] "Unlucky, you could not repeat your number within 3 throws. You lose, try again!"
```