

Random number generator from fair five sided die

Program generates random number from fair five sided die.

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr      1.1.4      v readr      2.1.5
## v forcats    1.0.0      v stringr   1.5.1
## v ggplot2    3.4.4      v tibble    3.2.1
## v lubridate  1.9.3      v tidyr     1.3.1
## v purrr      1.0.2
```

```
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
set.seed(10072021)
```

```
#Generate random integer from 1 to 5 with probabilities, 100 times
die <- c(sample(1:5, 100, replace = TRUE, prob = c(1/5, 2/5, 3/5, 4/5, 5/5)))
```

```
#Calculate mean of random numbers
mean_dice_value <- mean.default(die, trim = 0, na.rm = FALSE)
```

```
#Print mean value
print('Mean = ')
```

```
## [1] "Mean = "
```

```
print(mean_dice_value)
```

```
## [1] 3.63
```

```
#Determine standard deviation of random numbers
sd_dice_value <- sd(die)
print('Standard Deviation = ')
```

```
## [1] "Standard Deviation = "
```

```
print(sd_dice_value)
```

```
## [1] 1.315448
```

```

var_dice_value = var(die)
print('Variance = ')

## [1] "Variance = "

print(var_dice_value)

## [1] 1.730404

sample = c(1,2,3,4,5)
n = length(sample)
prob = c(1/15, 2/15, 3/15, 4/15, 5/15)
mean_distribution = sum(sample*prob)
print('mean_distribution = ')

## [1] "mean_distribution = "

print(mean_distribution)

## [1] 3.666667

var_distribution = sum(((sample- mean_distribution)^2)*prob)
print('var_distribution = ')

## [1] "var_distribution = "

print(var_distribution)

## [1] 1.555556

mean_error = mean_distribution - mean_dice_value
print('Error or difference in mean of distribution and mean of sample drawn = ')

## [1] "Error or difference in mean of distribution and mean of sample drawn = "

print(mean_error)

## [1] 0.03666667

var_error = var_distribution - var_dice_value
print('Error or difference in variance of distribution and variance of sample drawn = ')

## [1] "Error or difference in variance of distribution and variance of sample drawn = "

```

```
print(var_error)
```

```
## [1] -0.1748485
```