Name: *Student ID:*

CSC 120 (R Section) — Quiz #3 — 2015-03-13

No books, notes, or calculators are allowed. You have 25 minutes to write this quiz.

Question 1: [32 marks] In the four blank spaces below, write the output that R will produce:

```
> set.seed(654321)
> runif(1)
[1] 0.09940678
> runif(1)
[1] 0.509636
> runif(1)
[1] 0.9208333
> set.seed(654321)
> v <- rep(1,5)
> v



> if (runif(1) < 0.2) v[1] <- 0 else v[5] <- 0
> v



> if (runif(1) < 0.5) v[2] <- 0 else v[4] <- 0
> v



> v[3] <- runif(1)
> v
```

Question 2: [32 marks] In the three blank spaces below, write the output that R will produce:

```
> M <- matrix (seq (0.1, 0.9, length=9), nrow=3, ncol=3)
> rownames(M) <- c("mary","fred","sam")
> colnames(M) <- c("x","y","z")
> M







> M["mary","z"]



> M["fred",2:3]
```

Question 3: [36 marks] Write down a definition for a function called `fill_in_renter` that takes as its only argument a data frame that has variables `renter` and `student`, both of which are logical variables, whose values are `TRUE`, or `FALSE`, or `NA` if the value is missing. The data frame may also have other variables. This function should return a data frame that is like its argument, except that any occurrences of `NA` for the `renter` variable are replaced by `TRUE` if the value of the `student` variable in that row is `TRUE`, and by `FALSE` if the value of the student variable is `FALSE`, and if both `renter` and `student` in a row are `NA`, the value of `renter` is set to `TRUE` or `FALSE` randomly, with equal probabilities for these two values.

Here is an example:

```
> df
  renter student age
1   TRUE    TRUE  25
2     NA    TRUE  19
3  FALSE    TRUE  NA
4  FALSE   FALSE  31
5     NA   FALSE  42
6     NA      NA  29
> fill_in_renter(df)
  renter student age
1   TRUE    TRUE  25
2   TRUE    TRUE  19
3  FALSE    TRUE  NA
4  FALSE   FALSE  31
5  FALSE   FALSE  42
6   TRUE      NA  29
```

Note that the value of `renter` in the last row above was filled in randomly, so in another call of `fill_in_renter(df)`, it might be `FALSE` rather than `TRUE`.