STA511 Homework #1

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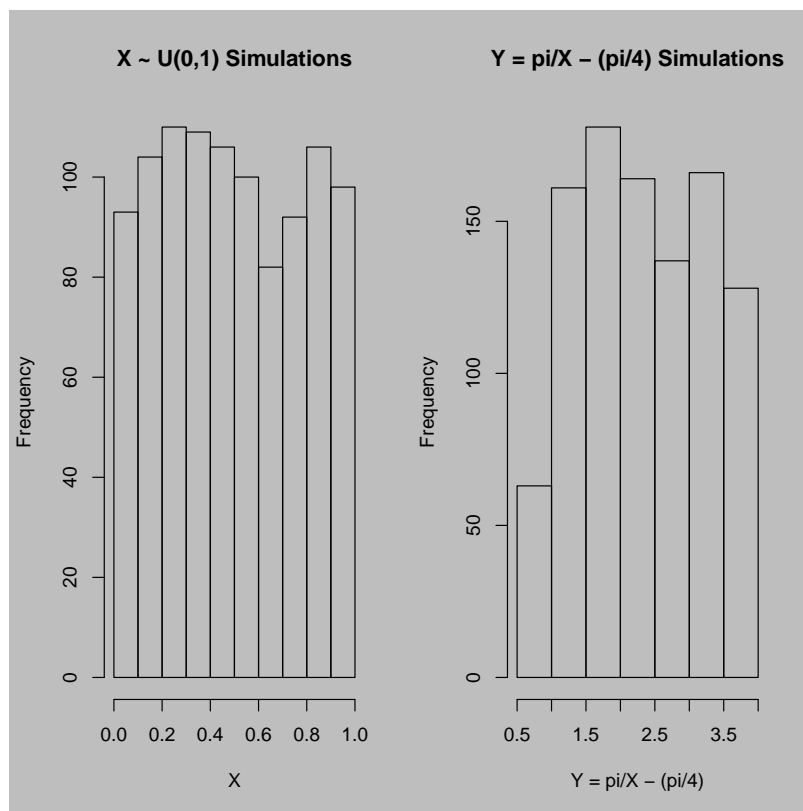
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1. No work required for question 1

2. My answer to # 2, has multiple parts.

   (a) X is a uniform random variable ($X \sim U(0,1)$). The histogram is shown in Figure 1.

   Figure 1: (Left panel): Random Sample 1. (Right panel): Random Sample 2
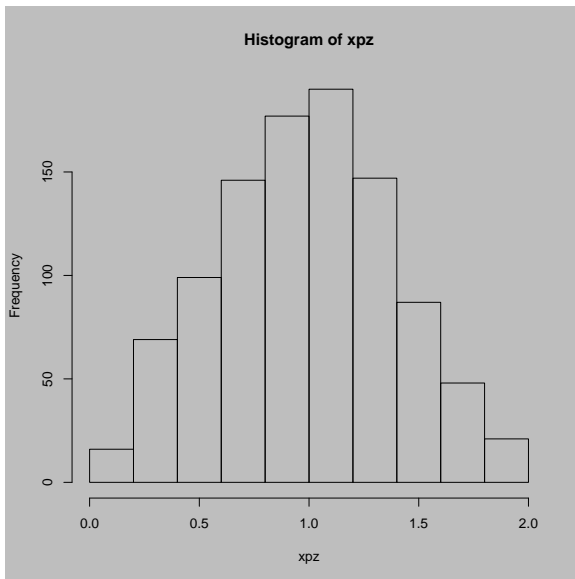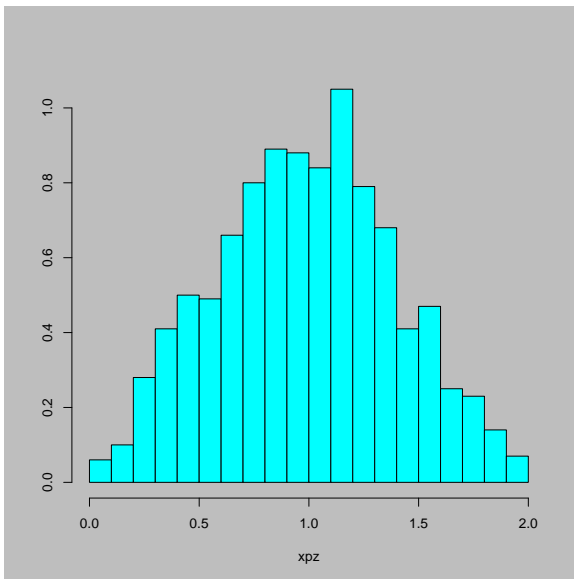

   (b) Here's my code for part a

```
#part 2a-1
runif.histogram <- runif(1000,0,1)

#part 2a-2
x <- runif.histogram
y <- 3.14*x + 3.14/4


pdf("hw1-q2a-runiform-histogram.pdf")
par(mfrow=c(1,2),bg="gray")
hist(runif.histogram, main="X ~ U(0,1) Simulations", xlab = 'X')
hist(y, main="Y = pi/X - (pi/4) Simulations", xlab = 'Y = pi/X - (pi/4)')
dev.off()
```

(a) $X + Z$

(b) $X + Z$ truehist()

(c) Here are my X + Z results

Here is my code for part 2b:

```
z <- runif(1000,0,1)
xpz <- x + z
pdf("hw1-q2c-xpz.pdf")
par(bg="gray")
hist(xpz)
dev.off()
```

3. My randomly assigned grades to class roster with correspoding letter grade.

Here is my code:

```
#question 3
class.roster <- read.table("classlist.txt",sep="\t",header=TRUE)
Percent.Grade <- runif(35, 60, 100)
class.roster.2 <- cbind(class.roster, Percent.Grade)
class.roster.2 <- data.table(class.roster.2)

#remove weird -\xa0 symbol
class.roster.2$Program.and.Plan <- gsub("[-\xa0]", "",class.roster.2$Program.and.Plan)

library(data.table)
class.roster.2[Percent.Grade > 95, Letter.Grade := "A"]
class.roster.2[Percent.Grade >= 90 & Percent.Grade < 95, Letter.Grade := "A-"]
class.roster.2[Percent.Grade >= 85 & Percent.Grade < 90, Letter.Grade := "B+"]
class.roster.2[Percent.Grade >= 80 & Percent.Grade < 85, Letter.Grade := "B"]
class.roster.2[Percent.Grade >= 75 & Percent.Grade < 80, Letter.Grade := "B-"]
class.roster.2[Percent.Grade < 75, Letter.Grade := "C"]

install.packages('xtable')
library(xtable)

roster.table <- xtable(class.roster.2)
print(roster.table)
```

	Name	Program.and.Plan	Level	Percent.Grade	Letter.Grade
1	An,Bo	Pharmaceutcl Sci Doctoral	Doctoral 2	73.00	C
2	Bu,Yahao	Public Health Masters	Masters 2	68.54	C
3	Chang,Huiru	Public Health Masters	Masters 2	63.61	C
4	Chen,Jiangwang	Public Health Masters	Masters 2	71.97	C
5	Eum,Youngseob	Arts & Sciences Doctoral	Doctoral 1	74.52	C
6	Ganley,Kevin	Public Health Masters	Masters 1	67.26	C
7	Hess,Katelyn	Arts & Sciences Masters	Masters 1	84.34	B
8	Hsu,En-Shuo	Public Health Masters	Masters 1	80.25	B
9	Jai Kumar Ahuja,Suruchi	Public Health Masters	Masters 1	82.86	B
10	Jin,Yuxuan	Public Health Doctoral	Doctoral 1	79.65	B-
11	Karaesmen,Ezgi	Roswell Park Doctoral	Doctoral 2	76.51	B-
12	Krishnan,Krithika	Public Health Masters	Masters 1	89.05	B+
13	Lin,Jieya	Public Health Masters	Masters 1	95.36	A
14	Mandava,Aishwarya	Public Health Masters	Masters 1	99.15	A
15	Marsales,Harry	Public Health Masters	Masters 2	68.66	C
16	Morrell,Kayla	Public Health Masters	Masters 1	83.43	B
17	Niu,Jin	Pharmaceutcl Sci Doctoral	Doctoral 2	91.37	A-
18	Rizvi,Abbas	Roswell Park Doctoral	Doctoral 2	92.22	A-
19	Rosario,Spencer Rae	Roswell Park Doctoral	Doctoral 2	84.09	B
20	Schiller,Emily	Public Health Masters	Masters 1	99.41	A
21	Song,Jiaming	Public Health Masters	Masters 1	87.51	B+
22	Spencer,Mary	Public Health Masters	Masters 1	65.71	C
23	Sun,Xiaoxi	Public Health Masters	Masters 1	97.25	A
24	Tanue,Terence Wankah	Public Health Masters	Masters 1	69.08	C
25	Tian,Mingmei	Public Health Masters	Masters 2	63.18	C
26	Vucic,Luther	Public Health Masters	Masters 1	78.60	B-
27	Wackeroth,Wolf Michael	Public Health Masters	Masters 1	68.49	C
28	Wang,Jiefei	Public Health Masters	Masters 1	93.77	A-
29	Wang,Xue	Roswell Park Doctoral	Doctoral 2	89.14	B+
30	Wu,Yin	Grad Sch of Ed Doctoral	Doctoral 2	86.43	B+
31	Yang,Yang	Grad Sch of Ed Doctoral	Doctoral 2	85.94	B+
32	Yang,Yujie	Pharmaceutcl Sci Doctoral	Doctoral 2	81.69	B
33	Yang,Zeyu	Public Health Masters	Masters 1	63.28	C
34	Yu,Xinyang	Biomedical Sci Doctoral	Doctoral 2	78.93	B-
35	Zhao,Yichen	Grad Sch of Ed Doctoral	Doctoral 2	62.93	C