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Exam 1
ECE645 Network Simulation
Fall, 2020

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Many probability distribution functions are helpful to describe operational characteristics for input and output process of a given system. In this homework, you write simple MATLAB functions which are relevant to these distribution functions.

First, you need to find out built-in functions for random number generation in MATLAB for the next distributions:
- (1) Binomial distribution;
- (2) Geometric distribution;
- (3) Poisson distribution;
- (4) Uniform distribution (continuous, not discrete);
- (5) Normal distribution;
- (6) Exponential distribution.

Second, you need to program your own functions of random-number generation, each of which follows each distribution above. You should use the following format (function name and the number of arguments) for each pdf function.

```
(1)function y=mybinomial(n,p);
(2)function y=mygeometric(n,p);
(3)function y=mypoisson(n,lambda);
(4)function y=myuniform(n,start,end);
(5)function y=mynormal(x,mu,sigma);
(6)function y=myexp(x,lambda).
```

Third, you need to program a main MATLAB program which graphically compares two results which come from the built-in function and your own pdf function, respectively, for each distribution function. The generated random numbers should follow each distribution.
Note that you should produce 6 pairs of figures with the following constraints: (1) each pair of figures shows the comparison for each distribution: (2) in the pair, the first figure shows that the random numbers generated with the MATLAB built-in function statistically follows the corresponding distribution and the other shows that those numbers generated with your own function also statistically conforms to the distribution.
Last, you should submit your all MATLAB programs and one README document to the instructor until the following deadline. *Note that you need to include your all MATLAB codes and one README document in one directory, then compress the directory into one file, and finally submit it to the instructor*.

<u>Submission</u>

You should directly deliver you project to the instructor (hnkim@korea.ac.kr).

1. All the files should be compressed into one zip file, and your email title should be [NS HW1] 2020170123_Hwangnam_Kim.zip
2. <u>Due date is 11:59PM on October 12, 2020</u>.
   - <u>No late submission is allowed.</u>
3. You may be requested to demonstrate your program in front of the instructor.