Computer Science 312
Principles of Programming Languages
Spring 2018
Assignment 7

Due: 5:00 p.m., Friday, 4/27

For this project, you will write a program in Haskell that produces output based on lists. The output from the program is shown below, along with a few hints. A constant list of **`list = [1,2,3,4,5]`** should be defined at the top of the file. Each statement in the program should be preceded by a blank line and a comment listing the output it is to produce, as shown below, e.g.,

```
-- [1,2,3,4,5]
print list
```

All of the output lines before the hint, "**`-- range`**", should use **`list`**. Note: each Haskell list operation may be used **only once** in your program.

Your solution should consist of a file called **`lists.hs`** file that takes advantage of Haskell list processing and prints the following:

```
[1,2,3,4,5]                    -- just the list
1                              -- head
[2,3,4,5]
5                              -- last
[1,2,3,4]
4
True                           -- is 3 in the list?
5                              -- size
False                          -- empty?
[5,4,3,2,1]
[1,2]
[3,4,5]
1                              -- least
5                              -- greatest
15                             -- sum
120
[1,4,9,16,25]
False                          -- is every element even?
True                           -- is at least one element odd?
[8,1,2,3,4,5]                  -- add to front
"ABCDEFGHIJKLMNOPQRSTUVWXYZ"   -- range
[3,9,15,18,21,27,30]           -- comprehension on explicit list
[0,0,0,0,0,0,0,0,0,0]          -- repeat
"abc"                          -- concat two lists
[(1,'a'),(2,'b'),(3,'c')]      -- zip
([1,2,3],"abc")                -- unzip
["Hello","world"]              -- operation on "Hello world"
```

The program can be compiled and run with the commands:

```
ghc lists.hs
./lists
```