

Week 4: Mini Project

This notebook will guide you through smaller portions of your final project. For this notebook, we will be using the Abalone dataset from the [UCI Machine Learning Repository](https://archive.ics.uci.edu/ml/datasets/Abalone) (<https://archive.ics.uci.edu/ml/datasets/Abalone>) (originating from the Marine Research Laboratories – Tarooona). This dataset should already be in your folder (under `abalone.csv`) or you can download it at the above link.



A Brief History of Abalones

An abalone is a sea snail belonging to one of a range of 30 to 130 species (depending on which scientist you ask). It is commonly prized for its mother-of-pearl shell, pearls, and delicious flesh by a variety of cultures and has long been a valuable source of food in its native environments. Sadly, wild populations of abalone have been overfished and poached to the point where commercial farming supplies most of abalone flesh nowadays. It now sits on the list of current animals threatened by extinction.

Source: <https://en.wikipedia.org/wiki/Abalone> (<https://en.wikipedia.org/wiki/Abalone>)

Part 1: Familiarize Yourself With the Dataset

The purpose of this dataset is to predict the age of an abalone through physical characteristics, determined by cutting the shell through the cone, staining it, and counting the number of rings through a microscope -- a boring and time-consuming task. Good thing it's already been done for us!

Below is the dataset description from the UCI Machine Learning Repository.

Name	Data Type	Measure	Description
Sex	nominal		M, F, and I (infant)
Length	continuous	mm	Longest shell measurement
Diameter	continuous	mm	perpendicular to length
Height	continuous	mm	with meat in shell
Whole weight	continuous	grams	whole abalone
Shucked weight	continuous	grams	weight of meat
Viscera weight	continuous	grams	gut weight (after bleeding)
Shell weight	continuous	grams	after being dried
Rings	integer		+1.5 gives the age in years

Run the cells below to examine the dataset.

In [33]:

```
# Load Abalone dataset
# Remember to change the file location if needed
import csv
f = open("./abalone.csv")
all_lines = csv.reader(f, delimiter = ',')

# We define a header ourselves since the dataset contains only the raw numbers.
dataset = []
header = ['Sex', 'Length', 'Diameter', 'Height', 'Whole Weight', 'Shucked Weight', 'Viscera Weight',
          'Shell Weight', 'Rings']
for line in all_lines:
    d = dict(zip(header, line))
    d['Length'] = float(d['Length'])
    d['Diameter'] = float(d['Diameter'])
    d['Height'] = float(d['Height'])
    d['Whole Weight'] = float(d['Whole Weight'])
    d['Shucked Weight'] = float(d['Shucked Weight'])
    d['Viscera Weight'] = float(d['Viscera Weight'])
    d['Shell Weight'] = float(d['Shell Weight'])
    d['Rings'] = int(d['Rings'])
    dataset.append(d)
```

In [2]:

```
# See first line of dataset
dataset[0]
```

Out[2]:

```
{'Sex': 'M',
 'Length': 0.455,
 'Diameter': 0.365,
 'Height': 0.095,
 'Whole Weight': 0.514,
 'Shucked Weight': 0.2245,
 'Viscera Weight': 0.101,
 'Shell Weight': 0.15,
 'Rings': 15}
```

Part 2: Simple Statistics

This dataset is already cleaned for us and relatively straightforward, without strings or time data. In your final project, you will have to take care of missing or tricky values yourself.

Fill in the following cells with the requested information about the dataset. The answers are given so you can check the output of your own code. For floating numbers, don't worry too much about the exact numbers as long as they are quite close -- different systems may have different rounding protocols.

Feel free to `import numpy` if you want more practice with it, or just use Python's native structures to play around with the numbers.

In [3]:

```
# Q: What is the total number of entries in the dataset?
# A: 4177
len(dataset)
```

Out[3]:

4177

In [14]:

```
# Q: What is the average length of an abalone?
# A: 0.5239920995930099 or 0.524
sum([d['Length'] for d in dataset])/len(dataset)
```

Out[14]:

0.5239920995930099

In [13]:

```
# Q: What is the widest abalone in the dataset (diameter)?
# A: 0.65
max([d['Diameter'] for d in dataset])
```

Out[13]:

0.65

In [16]:

```
# Q: What is the average number of rings of smaller abalones compared to that of larger
#     abalones? That
#     is, do smaller abalones tend to be younger or older than larger abalones?
#     We will count small abalones as abalones with lengths less than or equal to the av
#     erage length of
#     an abalone. The average length of an abalone is 0.524.
# A: Small Abalones have on average 8.315645514223196 rings.
#     Large Abalones have on average 11.192848020434228 rings.

# Change variable name if necessary
sumLarge=0
countLarge=0
sumSmall=0
countSmall=0
for d in dataset:
    if d['Length'] >= 0.524:
        sumLarge += d['Rings']
        countLarge += 1
    else:
        sumSmall += d['Rings']
        countSmall += 1
ageLarge = sumLarge/countLarge
ageSmall = sumSmall/countSmall
print('Small Abalones have on average', ageSmall, 'rings.')
print('Large Abalones have on average', ageLarge, 'rings.')
```

Small Abalones have on average 8.315645514223196 rings.
Large Abalones have on average 11.192848020434228 rings.

Part 3: Data Visualizations

In this course, we learned about [Matplotlib](https://matplotlib.org) (<https://matplotlib.org>), a "Python 2D plotting library which produces publication quality figures in a variety of hardcopy formats and interactive environments across platforms". There are a [variety of plots and figures](https://matplotlib.org/gallery/index.html) (<https://matplotlib.org/gallery/index.html>) we can make with Matplotlib, and in conjunction with NumPy, becomes a powerful and versatile tool in your skillset.

In lectures, we covered the basics of line plots, histograms, scatter plots, bar plots, and box plots. Let's try out a few below.

In [19]:

```
import matplotlib.pyplot as plt
from matplotlib import colors
import numpy
from collections import defaultdict
```

Line Plots

Line plots show the change in data over time. The example Line Plot below plots the change in density as abalones age (i.e. the distribution of rings). **Note that a line plot is not necessarily the best way to show this data since it doesn't deal with a trend!** Use a histogram (next step) to better showcase this data.

In [18]:

```
# Parse out Rings column from dataset
rings = [d['Rings'] for d in dataset]
rings.sort()

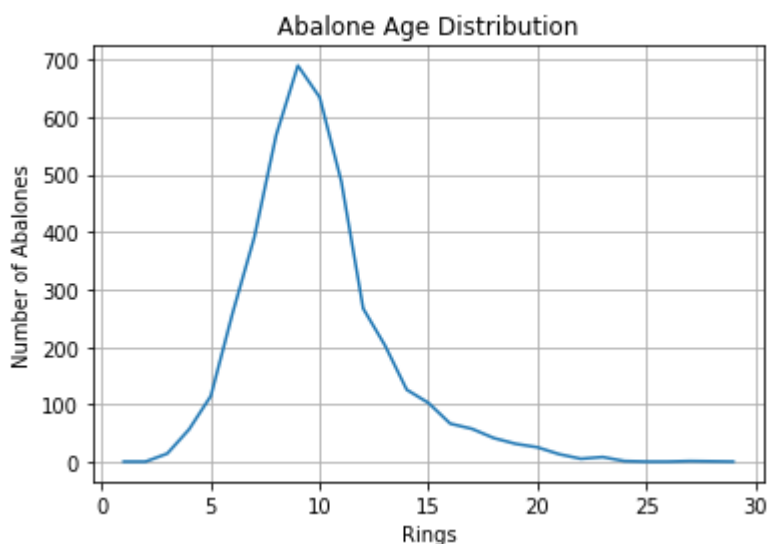
# Count number of abalones with each number of rings with defaultdict
abalone_rings = defaultdict(int)
for r in rings:
    abalone_rings[r] += 1
X = list(abalone_rings.keys())
Y = list(abalone_rings.values())

# Customize plot
plt.gca().set(xlabel='Rings', ylabel='Number of Abalones',
              title='Abalone Age Distribution')
plt.grid()

# Show the plot of Rings vs Number of Abalones
plt.plot(X, Y)
```

Out[18]:

[<matplotlib.lines.Line2D at 0x26af7fae780>]



Histograms

Histograms show the distribution of numeric continuous variables with central tendency and skewness.

Using the line plot data from above, plot a histogram showing the distribution of abalone age. Feel free to explore [matplotlib](https://matplotlib.org/gallery/index.html) (<https://matplotlib.org/gallery/index.html>) on your own to customize your histogram and the following visualizations.

In [25]:

```
# Complete this cell with a histogram of abalone age distribution

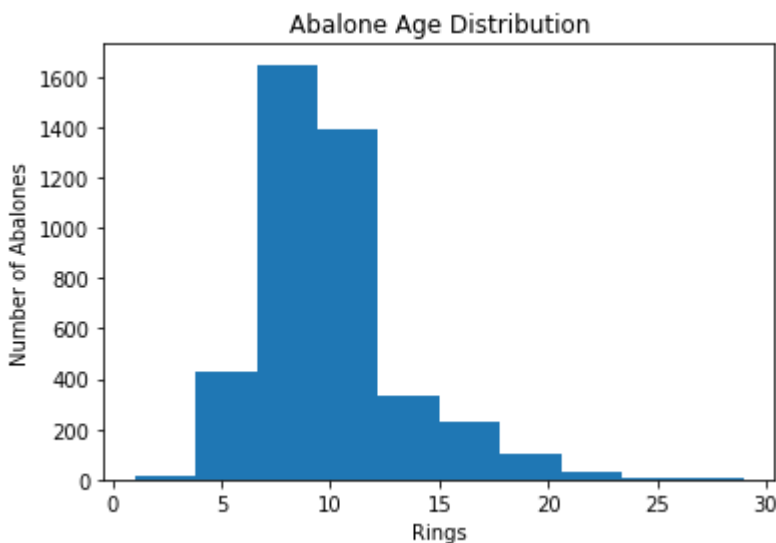
# Flatten distribution list into frequency distribution
age_freq = []
for key in abalone_rings.keys():
    for i in range(0, abalone_rings.get(key)):
        age_freq.append(key)
print(age_freq[:10])

# Plot your histogram here
plt.gca().set(xlabel='Rings', ylabel='Number of Abalones', title='Abalone Age Distribution')
plt.hist(age_freq)
```

[1, 2, 3, 3, 3, 3, 3, 3, 3, 3]

Out[25]:

```
(array([ 17., 431., 1648., 1388., 329., 228., 100., 29., 4.,
        3.]),
 array([ 1. , 3.8, 6.6, 9.4, 12.2, 15. , 17.8, 20.6, 23.4, 26.2, 29.
]),
 <a list of 10 Patch objects>)
```



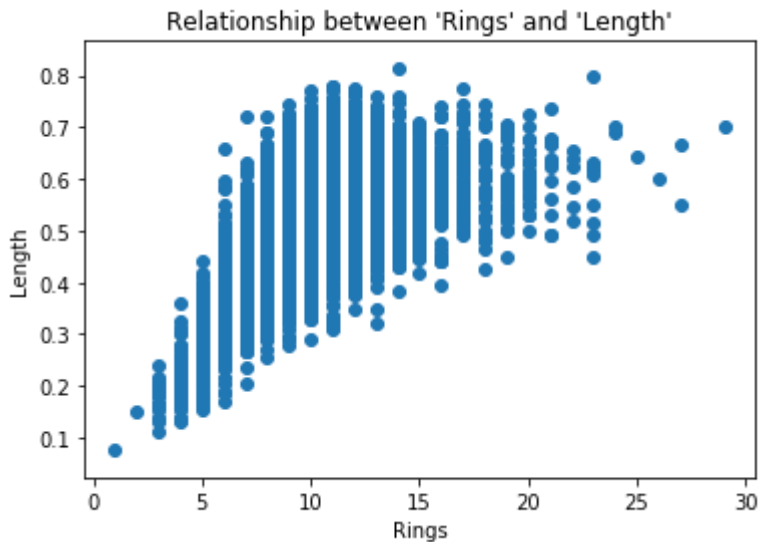
Scatter Plots

Scatter plots show the strength of a relationship between two variables (also known as correlations). From *Part 2: Simple Statistics*, we see that larger abalones tend to be larger, at least from a numbers perspective. **Let's see if this is actually true by creating a scatter plot showing the relationship between Rings and Length .**

On Your Own: Read up on `sciPy` and how you can calculate and graph the correlation as well.

In [30]:

```
# Complete this cell with a scatter plot of age vs length
rings = [d['Rings'] for d in dataset]
length = [d['Length'] for d in dataset]
plt.scatter(rings, length)
plt.xlabel("Rings")
plt.ylabel("Length")
plt.title("Relationship between 'Rings' and 'Length'")
plt.show()
```



Bar Plots

Bar plots are great for comparing categorical variables. There are a few subtypes of bar plots, such as the grouped bar chart or stacked bar chart. Since we have the `Sex` field to play with, we can compare data across `M` and `F` abalones. Below is a simple stacked bar chart comparing the `Sex` category with the `Shucked Weight` data. **Create a bar chart of your choice of data.**

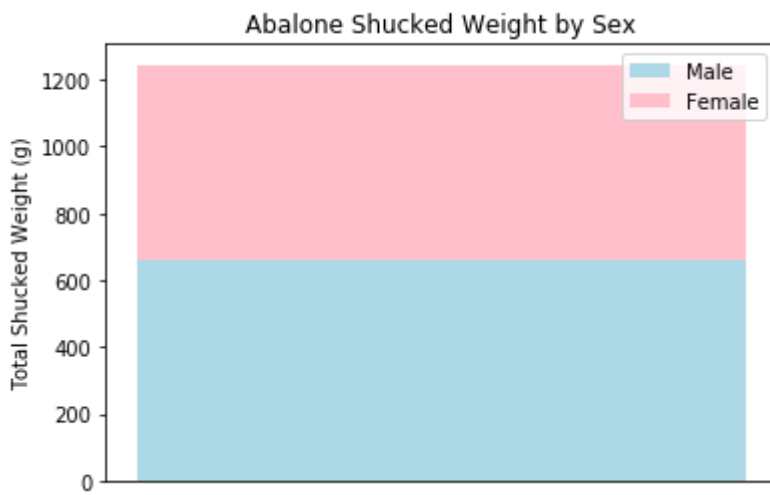
You may refer to the cell below to parse out fields by sex.

In [35]:

```
# Example Stacked Bar Chart - Comparisons Between Sexes
Mweight = sum([d['Shucked Weight'] for d in dataset if d['Sex'] is 'M'])
Fweight = sum([d['Shucked Weight'] for d in dataset if d['Sex'] is 'F'])
index = [1]

p1 = plt.bar(index, Mweight, color='lightblue')
p2 = plt.bar(index, Fweight, bottom=Mweight, color='pink')
plt.gca().set(title='Abalone Shucked Weight by Sex', ylabel='Total Shucked Weight (g)'
);
plt.xticks([])

plt.legend((p1[0], p2[0]), ('Male', 'Female'))
plt.show()
```



In [40]:

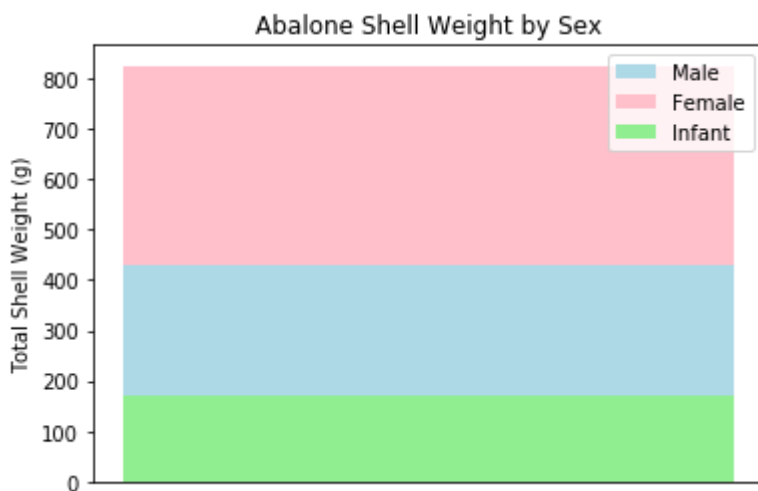
```
# Complete this cell with your choice of data
Mweight = sum([d['Shell Weight'] for d in dataset if d['Sex'] is 'M'])
Fweight = sum([d['Shell Weight'] for d in dataset if d['Sex'] is 'F'])
Iweight = sum([d['Shell Weight'] for d in dataset if d['Sex'] is 'I'])

index = [1]

p1 = plt.bar(index, Mweight, color='lightblue')
p3 = plt.bar(index, Iweight, color='lightgreen')
p2 = plt.bar(index, Fweight, bottom=Mweight, color='pink')

plt.gca().set(title='Abalone Shell Weight by Sex', ylabel='Total Shell Weight (g)');
plt.xticks([])

plt.legend((p1[0], p2[0],p3[0]), ('Male', 'Female', 'Infant'))
plt.show()
```



Box Plots

Box plots are useful for comparing distributions of data and are commonly found in research papers. The box portion of a box plot represents 50% of the data, and there are versions where you can mark outliers and other extremes. We have the distribution of rings already from the line plot example under the variable name `age_freq`, assuming you haven't modified it. **Find the distribution of another field of your choice and create one or more box plots with both of these fields.**

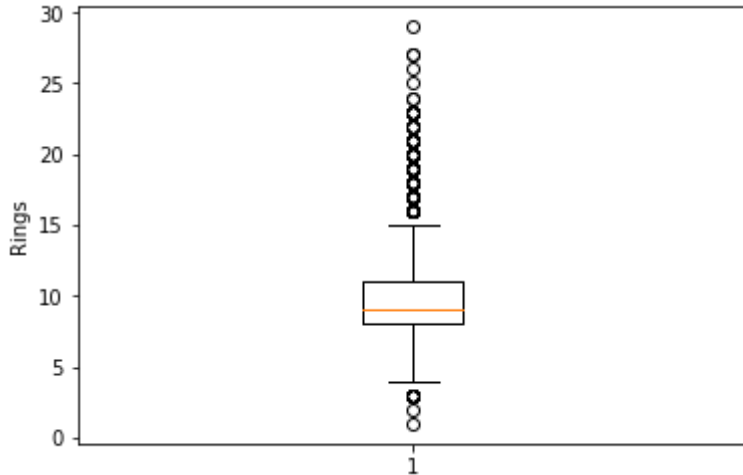
Hint: You can plot multiple box plots with the command `plt.boxplot([plot1, plot2, ..., plotn])` or use `subplots()` to draw multiple separate plots at the same time. See [this matplotlib example \(https://matplotlib.org/gallery/statistics/boxplot_demo.html#sphx-glr-gallery-statistics-boxplot-demo-py\)](https://matplotlib.org/gallery/statistics/boxplot_demo.html#sphx-glr-gallery-statistics-boxplot-demo-py) for more.

In [43]:

```
# Complete this cell with multiple box plots
plt.boxplot([age_freq])
plt.ylabel("Rings")
```

Out[43]:

Text(0, 0.5, 'Rings')



Free Response (optional)

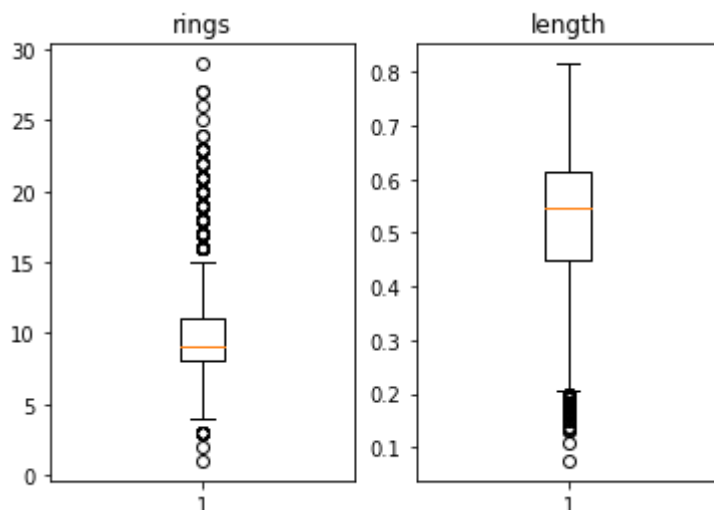
Experiment and create visualizations of your own here.

In [64]:

```
# Description of visualization
fig, axs = plt.subplots(1,2)
axs[0].boxplot(rings)
axs[0].set_title('rings')
axs[1].boxplot(length)
axs[1].set_title('length')
```

Out[64]:

Text(0.5, 1.0, 'length')



Part 4: Web Scraping (Optional)

BeautifulSoup Documentation: <https://www.crummy.com/software/BeautifulSoup/bs4/doc/>
(<https://www.crummy.com/software/BeautifulSoup/bs4/doc/>)

This part of the notebook is not graded, but still contains some valuable tips for web-scraping! You were introduced to a method of creating your own dataset by parsing a webpage in lecture videos and this week's notebook. Here is another way to parse a webpage with BeautifulSoup. We will be using a short story from Project Gutenberg (*Little Boy* (<http://www.gutenberg.org/files/58743/58743-h/58743-h.htm>) by Harry Neal, 1954) as an example.

On Your Own: Read this page on webscraping and try out a project!

Introduction to Beautiful Soup

Below are a few useful commands we will be using throughout the next section as we parse a webpage.

In [65]:

```
from urllib.request import urlopen
from bs4 import BeautifulSoup
```

In [66]:

```
# Open and extract HTML from the webpage
f = urlopen("http://www.gutenberg.org/files/58743/58743-h/58743-h.htm")
html = str(f.read())

# First 100 characters of the HTML we grabbed
html[:100]
```

Out[66]:

```
'b\<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"\n\n    "http://www.w3.org/TR/xhtml1/DTD/xhtml1/DTD/xhtml1.dtd">'
```

In [67]:

```
# Convert our HTML object to a BeautifulSoup object and make it readable  
soup = BeautifulSoup(html, 'html.parser')  
print(soup.prettify())
```

[illegible]

```
<hr class="chap"/>
\r\n\r\n
<div class="titlepage">
\r\n\r\n
<h1>
  LITTLE BOY
</h1>
\r\n\r\n
<h2>
  BY HARRY NEAL
</h2>
\r\n\r\n
<p class="ph1">
  <i>
    There are times when the animal in Mankind
    <br/>
    \r\nsavagely asserts itself. Even children become
    <br/>
    \r\nsnarling little beasts. Fortunately, however,
    <br/>
    \r\nin childhood laughter is not buried deep.
  </i>
</p>
\r\n\r\n
<p>
  [Transcriber\'s Note: This etext was produced from
  <br/>
  \r\nWorlds of If Science Fiction, October 1954.
  <br/>
  \r\nExtensive research did not uncover any evidence that
  <br/>
  \r\nthe U.S. copyright on this publication was renewed.]
</p>
\r\n\r\n
</div>
\r\n\r\n
<hr class="chap"/>
\r\n\r\n
<p>
  He dropped over the stone wall and flattened to the ground. He looked\r\n
  \r\nwarily about him like a young wolf, head down, eyes up. His name was\r\n
  Steven—but he\'d forgotten that. His face was a sunburned, bitter,\r\n
  \r\nfitted by eleven-year-old face—tight lips, lean cheeks, sharp blue\r\n
  \r\neyes with startlingly clear whites. His clothes were rags—a pair of\r\n
  \r\ncorduroy trousers without any knees; a man\'s white shirt, far too big\r\n
  \r\nfor him, full of holes, stained, reeking with sweat; a pair of dirty\r\n
  \r\nbrown sneakers.
</p>
\r\n\r\n
<p>
  He lay, knife in hand, and waited to see if anyone had seen him coming\r\n
  \r\nover the wall or heard his almost soundless landing on the weedgrown\r\n
  \r\ndirt.
</p>
\r\n\r\n
<p>
  Above and behind him was the grey stone wall that ran along Central\r\n
  \r\nPark West all the way from Columbus Circle to the edge of Harlem.\r\n
  \r\nHe had jumped over just north of 72nd Street. Here the park was\r\n
  \r\nconsiderably below street level—the wall was about three feet high on\r\n
  \r\nthe sidewalk side and about nine feet high on the park side. From where\r\n
  \r\nhe lay at the foot of the wall only the jagged, leaning tops of the\r\n
  \r\nshattered apartme
```

nt buildings across the street were visible. Like the teeth of a skull
's smile they caught the late afternoon sunlight that drifted across the park.

</p>

\n\n

<p>

For five minutes Steven had knelt motionless on one of the cement benches on the other side of the wall, just the top of his head and his eyes protruding over the top. He had seen no one moving in the park. Every few seconds he had looked up and down the street behind him to make sure that no one was sneaking up on him that way. Once he had seen a man dart out halfway across the street, then wheel and vanish back into the rubble where one whole side of an apartment house had collapsed into 68th Street.

</p>

\n\n

<p>

Steven knew the reason for that. A dozen blocks down the street, from around Columbus Circle, had come the distant hollow racket of a pack of dogs.

</p>

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<p>

Then he had jumped over the wall—partly because the dogs might head this way, partly because the best time to move was when you couldn't see anyone else. After all, you could never be

<i>

sure

</i>

that no one was seeing

<i>

you

</i>

. You just moved, and then you waited to see if anything happened. If someone came at you, you fought. Or ran, if the other looked too dangerous.

</p>

\n\n

<p>

No one came at him this time. Only a few days ago he'd come into the park and two men had been hidden in the bushes a few yards from the wall. They'd been lying very still, and had covered themselves with leaves, so he hadn't seen them; and they'd been looking the other way, waiting for someone to come along one of the paths or through the trees, so they hadn't seen him looking over the wall.

</p>

\n\n

<p>

The instant he'd landed, they were up and chasing him, yelling that if he'd drop his knife and any food he had they'd let him go. He dropped the knife, because he had others at home—and when they stopped to paw for it in the leaves, he got away.

</p>

\n\n

<p>

Now he got into a crouching position, very slowly. His nostrils dilated as he sniffed the breeze. Sometimes you knew men were near by their smell—the ones who didn't stand outside when it rained and scrub the smell off them.

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<p>

He smelled nothing. He looked and listened some more, his blue eyes\r\nhard and bright. He saw nothing except trees, rocks, bushes, all\r\ncrowded by thick weeds. He heard nothing except the movement of\r\ngreenery in the afternoon breeze, the far off baying of the dog pack,\r\nthe flutter of birds, the scamper of a squirrel.

</p>

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<p>

He whirled at the scamper. When he saw that it was a squirrel, he\r\nlicked his lips, almost tasting it. But it was too far away to kill\r\nwith the knife, and he didn't want to risk stoning it, because that\r\nmade noise. You stoned squirrels only after you'd scouted all around,\r\nand even then it was dangerous—someone might hear you anyway and sneak\r\nup and kill you for the squirrel, or for anything else you had, or just\r\nkill you—there were some men who did that. Not for guns or knives or\r\nfood or anything else that Steven could see ... they just killed, and\r\nhowled like dogs when they did it. He'd watched them. They were the men\r\nwith the funny looks in their eyes—the ones who tried to get you to\r\ncome close to them by pretending to offer you food or something.

</p>

\r\n\r\n

<p>

In a half-crouch Steven started moving deeper into the park, pausing\r\neach time he reached any cover to look around. He came to a long green\r\nslope and went down it soundlessly, stepping on rocks whenever he\r\ncould. He crossed the weedgrown bridle path, darting from the shelter\r\nof a bush on one side to press against the trunk of a tree on the other.

</p>

\r\n\r\n

<p>

He moved so silently that he surprised another squirrel on the tree\r\ntrunk. In one furious motion Steven had his knife out of his belt, and\r\nsliced it at the squirrel so fast the blade went

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whuh

</i>

in the air—but\r\nthe squirrel was faster. It scurried up out of reach, and the knife\r\njust clipped off the end of its tail. It went higher, and out onto a\r\nbranch, and chattered at him. It was funny about squirrels—they didn't\r\nseem to feel anything in their tails. Once he'd caught one that way,\r\nand it had twisted and run off, leaving the snapped-off tail in his\r\nhand.

</p>

\r\n\r\n

<p>

Dogs weren't that way—once he'd fought a crippled stray from a pack,\r\nand he'd got it by the tail and swung it around and brained it on a\r\nlamppost.

</p>

\r\n\r\n

<p>

Dogs ... squirrels....

</p>

\r\n\r\n

<hr class="tb"/>

\r\n\r\n

<p>

Steven had some dim, almost dreamlike memory of dogs that acted\r\nfriendly, dogs that didn't roam the streets in packs and pull you\r\ndown and tear you apart and eat you alive; and he had a memory of the\r\nsquirrels

in the park being so tame that they\'d eat right out of your\`nhand....

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\`n\`n\`n

<p>

But that had been a long, long time ago—before men had started hunting squirrels, and sometimes dogs, for food, and dogs had started hunting men.

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\`n\`n\`n

<p>

Steven turned south and paralleled the bridle path, going always where the cover was thickest, moving as silently as the breeze. He was going no place in particular—his purpose was simply to see someone before that someone saw him, to see if the other had anything worth taking, and, if so, take it if possible. Also, he\'d try to get a squirrel.

</p>

\`n\`n\`n

<p>

Far ahead of him, across the bridle path and the half-mile or so of tree-clumped park that lay beyond, was Central Park South—a sawtoothed ridge of grey-white rubble. And beyond that lay the ruin of midtown Manhattan. The bomb had exploded low over 34th Street and Seventh Avenue that night six years ago, and everything for a mile in every direction had been leveled in ten seconds. The crater started at around 26th and sloped down to where 34th had been and then up again to 40th, and it glowed at night. It wasn\'t safe to go down around the crater, Steven knew. He\'d heard some men talking about it—they\'d said that anyone who went there got sick; something would go wrong with their skin and their blood, and they\'d start glowing too, and die.

</p>

\`n\`n\`n

<p>

Steven had understood only part of that. The men had seen him and chased him. He\'d gotten away, and since then had never ventured below Central Park South.

</p>

\`n\`n\`n

<p>

It was a "war", they\'d said. He didn\'t know much about that either... who was winning, or had won, or even if it was still being fought. He\'d had only the vaguest notion of what a war was—it was some kind of fight, but he didn\'t think it was over food. Someone had "bombed" the city—once he had heard a man call the city a "country"—and that was about as early as he could remember anything. In his memory was the flash and roar of that night and, hours before that, cars with loud voices driving up and down the streets warning everybody to get out of the city because of the "war". But Steven\'s father had been drunk that night, lying on the couch in the living room of their apartment on the west side, and even the bomb hadn\'t waked him up. The cars with the voices had waked Steven up; he\'d gone back to sleep after a while, and then the bomb had waked him up again. He\'d gone to the window and climbed out onto the fire escape, and seen the people running in the street, and listened to all the screaming and the steady rumble of still-falling masonry, and watched the people on foot trample each other and people in cars drive across the bodies and knock other people down and out of the way, and still other people jump on the cars and pull out the drivers and try to drive away themselves until someone pulled

<i>

them

</i>

out.... Steven had watched, fascinated, because it was more exciting

than anything he'd ever seen, like a movie. Then a man had stood under the fire escape, holding up his arms, and shouted up at Steven to jump for God's sake, little boy, and that had frightened Steven and he went back inside. His father had always told him never to play with strangers.

</p>

<p>

Next afternoon Steven's father had gotten up and gone downstairs to get a drink, and when he saw what had happened, he'd come back making choked noises in his throat and saying over and over again, "Everybody worth a damn got out ... now it's a jungle ... all the scum left, like me—and the ones they hurt, like you, Stevie...." He'd put some cans of food in a bag and started to take Steven out of the city, but a madman with a shotgun had blown the side of his head off before they'd gone five blocks. Not to get the food or anything ... looting was going on all over, but there wasn't any food problem yet ... the man was just none of the ones who killed for no reason at all. There'd been a lot like that the first few weeks after the bomb, but most of them hadn't lasted long—they wanted to die, it looked like, about as much as they wanted to kill.

</p>

<hr class="chap"/>

<div class="figcenter">

</div>

<hr class="chap"/>

<p>

Steven had gotten away. He was five years old and small and fast on his feet, and the madman missed with the other barrel.

</p>

<p>

Steven had fled like an animal, and since then had lived like one. He'd stayed away from the men, remembering how his father had looked with half a head—and because the few times men had seen him, they'd chased him; either they were afraid he'd steal from them, or they wanted his knife or belt or something. Once or twice men had shouted that they wouldn't hurt him, they only wanted to help him—but he didn't believe them. Not after seeing his father that way, and after the times they had tried to kill him.

</p>

<p>

He watched the men, though, sneaking around their fires at night—sometimes because he was lonely and, later on, hoping to find scraps of food. He saw how they lived, and that was the way he lived too. He saw them raid grocery stores—he raided the stores after they left. He saw them carrying knives and guns—he found a knife and carried it; he hadn't yet found a gun. They ran from the dogs; he learned to run from them, after seeing them catch a man once. The men raided other stores, taking clothes and lots of things whose use Steven didn't understand. Steven took some clothes at first, but he didn't care much about what he wore—both his shirt and his heavy winter coat had come from dead men. He found toy stores, and had a lot of toys. The men collected and hoarded wa

ds of green paper, and sometimes fought and killed each other over it. Steven vaguely remembered that it was called "money", and that it was very important. He found it too, here and there, in dead men's pockets, in boxes with sliding drawers in stores—but he couldn't find any use for it, so his hoard of it lay hidden in the hole in the floor under the pile of blankets that was his bed.

</p>

<p>

Eventually he saw the men begin to kill for food, when food became scarce. When that happened—the food scarcity, and the killing—many of the men left the city, going across the bridges and through the tunnels under the rivers, heading for the "country".

</p>

<p>

He didn't follow them. The city was all he'd ever known.

</p>

<p>

He stayed. Along with the men who said they'd rather stay in the city where there was still plenty of food for those who were willing to hunt hard and sometimes kill for it, and, in addition, beds to sleep in, rooms for protection from the weather and dogs and other men, all the clothes you could wear, and lots of other stuff just lying around for the taking.

</p>

<p>

He stayed, and so he learned to kill, when necessary, for his food. He had six knives, and with them he'd killed men higher than he could count. He was good at hiding—in trees, in hallways, behind bushes, under cars—and he was small enough to do a good job of trailing when he saw somebody who looked as though they were carrying food in their pockets or in the bags almost everyone carried. And he knew where to strike with the knife.

</p>

<p>

His home was the rubble of an apartment building just north of Columbus Circle, on Broadway. No one else lived there; only he knew the way through the broken corridors and fallen walls and piles of stone to his room on the seventh floor. Every day or so he went out into the park—to get food or anything at all he could get that he wanted. He was still looking for a gun. Food was the main thing, though; he had lots of cans up in his room, but he'd heard enough of the men's talk to know that it was wise to use them only when you didn't have anything else, and get what you could day by day.

</p>

<p>

And, of course, there was water—when it didn't rain or snow for a while, he had to get water from the lakes in the park.

</p>

<p>

That was hard sometimes. You could go two or three days without water, even if you went to one of the lakes and stayed hidden there all day, because it might be that long before a moment came when no one was near enough to kill you when you made your dash from the bushes and filled your pail and dashed back. There were more skeletons around the lake

s\r\nthan anyplace.

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<p>

The dogs were coming up Central Park West. Their racket bounced off the broken buildings lining the street, and came down into the park, and even the squirrels and birds were quieter, as if not wanting to attract attention.

</p>

\r\n\r\n

<p>

Steven froze by the bole of a tree, ready to climb if the dogs came over the wall at him. He'd done that once before. You climbed up and waited while the dogs danced red-eyed beneath you, until they heard or smelled someone else, and then they were off, bounding hungrily after the new quarry. They'd learned that men in trees just didn't come down.

</p>

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<p>

The dogs passed the point in the park where Steven waited. He knew from the sound that they weren't after anybody—just prowling. The howls and snarls and scratchy sounds of nails on concrete faded slowly.

</p>

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<p>

Steven didn't move until they were almost inaudible in the distance.

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<p>

Then, when he did move, he took only one step—and froze again.

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<p>

Someone was coming toward him.

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<p>

Just a shadow of a motion, a whisper of sound, a breath—someone was coming along the path on the other side of the bushes.

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<p>

Steven's lips curled back to reveal decayed teeth. He brought out his knife from his belt and stood utterly still, waiting for the steps to go on so he could trail along behind his quarry, off to one side, judging the other's stature from glimpses through the bushes, and ascertaining whether he was carrying anything worth killing him for.

</p>

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<p>

But the footsteps didn't pass. They stopped on the other side of the bushes. Then leaves rustled as whoever it was bent to come through the bushes. Steven hugged his tree trunk, and saw a short thin figure coming toward him through the green leaves, a bent-over figure. He raised the knife, started to bring its point down in the short arc that would end in the back of the other's neck...

</p>

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<p>

He dropped the knife.

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<p>

Wide-eyed, not breathing, he stared at her.

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<p>

Knife in hand, its point aimed at his belly, she stared back.

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\r\n\r\n

<p>

She was dressed in a man's trousers, torn off at the ankles, and a yellow blouse that might have belonged to her mother, and new-looking shoes she must have found, or killed for, only a week or so ago. Her face was as sunburned and dirty as his.

</p>

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<p>

A squirrel chattered over their heads as they stared at each other.

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<p>

Steven noted expertly that she seemed to be carrying no food and had no gun. No one with a gun would carry a drawn knife.

</p>

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<p>

She still held the knife ready, though the point had drooped. She listened her lips.

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<p>

He wondered if she would attack. He obviously didn't have any food either, so maybe she wouldn't. But if she did—well, she was only a little larger than he was; he could probably kill her with her own knife, though he might even get his own knife from the ground before she got to him.

</p>

\r\n\r\n

<p>

But it was a

<i>

woman

</i>

, he knew ... without knowing exactly what a woman was, or how he knew. The hair was long—but then, some of the men's hair was long too. It was something different—something about the face and body. He hadn't seen many women, and certainly never one as little as this, but he knew that's what it was. A

<i>

woman

</i>

.

</p>

\r\n\r\n

<p>

Once he'd seen some men kill another man who'd killed a woman for her food. By their angry shouts he knew that killing a woman was different somehow.

</p>

\r\n\r\n

<p>

And he remembered a woman. And a word: mother. A face and a word, a\r\n voice and a warmth and a not-sour body smell ... she was dead. He\r\n\r\ndidn \r\n't remember who had killed her. Somehow he thought she had been\r\n\r\nkilled

<i>

before

</i>

everything changed,

<i>

before

</i>

the "bomb" fell; but he\r\n\r\ncouldn\r\n't remember very well, and didn\r\n't know how she\r\n'd been killed or\r\n\r\neven why people had killed each other in those days.... Not for food,\r\n\r\nhe thought; he could remember having plenty to eat. Another word:\r\n\r\ncancer. His father had said it about his mother. Maybe somebody had\r\n\r\nkilled her to get that, instead of food. Anyway, somebody had killed\r\n\r\nher, because she was dead, and people didn\r\n't just

<i>

die

</i>

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</p>

\r\n\r\n\r\n

<p>

Seeing a

<i>

woman

</i>

, and such a little one ... it had startled him so much\r\n\r\nhe had dropped his knife.

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<p>

But he could still kill her if he had to.

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<p>

She stirred, her eyes wide on his. She moved just an inch or so.

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<p>

Steven crouched, almost too fast to see, and his knife was in his hand,\r\n\r\nready from this position to get in under her stab and cut her belly\r\n\r\nopen.

</p>

\r\n\r\n\r\n

<p>

She made a strangled sound and shook her head.

</p>

\r\n\r\n\r\n

<p>

Steven pulled his swing, without quite knowing why. He struck her knife\r\n\r\nout of her hand with his blade, and it went spinning into the leaves.

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<p>

He took a step toward her, lips curled back.

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<p>

She retreated two steps, and her back was against a tree trunk.

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\r\n\r\n

<p>

He came up to her and stood with his knife point pressing into her\r\nnb
elly just above where the blouse entered the man\'s pants.

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<p>

She whimpered and shook her head and whimpered again.

</p>

\r\n\r\n

<p>

He scowled at her. Looked her up and down. She was wearing a tarnished
\r\nrning on her right hand, with a stone that sparkled. He liked it. He\r
\r\nndecided to kill her. He pressed the knifepoint harder, and twisted.

</p>

\r\n\r\n

<p>

She said, "Little boy—" and started to cry.

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\r\n\r\n

<p>

Memories assailed Steven:

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\r\n\r\n

<p>

<i>

Jump for God\'s sake, little boy....

</i>

</p>

\r\n\r\n

<p>

Distrust. Kill her.

</p>

\r\n\r\n

<p>

<i>

My little boy ... my son....

</i>

</p>

\r\n\r\n

<p>

His knifepoint wavered. He scowled.

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\r\n\r\n

<p>

<i>

Don\'t run away, little boy—we won\'t hurt you....

</i>

</p>

\r\n\r\n

<p>

Kill.

</p>

\r\n\r\n

<p>

Tears were rolling down her cheeks.

</p>

\r\n\r\n

<p>

<i>
My son, my baby ... I'm crying because I have to go away for a long
</i>
</p>
<p>
Steven stepped back. She was weaponless, and a
<i>
woman
</i>
-whatever that
</p>
<p>
Leaves rustled. Steven and the girl froze motionless.
</p>
<p>
It was only a squirrel in the bushes.
</p>
<p>
He bent silently, looked around under the leafy green bushes that
rounded them, almost at ground-level. If there had been men nearby,
he could have seen their legs. He saw nothing. He kept one eye on the
girl as he bent. She wasn't crying, now that he'd taken the knife away.
She was watching him and rubbing her belly where he'd pressed it.
</p>
<p>
When he straightened, she took a step away from the tree, moving as
silently as he ever had. Suddenly she stooped to pick up her knife,
made a slashing motion at the ground with it, looked up at him.
</p>
<p>
He was in mid-air. On her. She flattened beneath him with a squeal. She
was stronger than he was, and experienced. She brought her knife back
over her shoulder, and if he hadn't ducked his head it would have laid
his face open. When she brought it down for another try, he clubbed
the back of her hand with the hilt of his knife, and she gasped and
dropped it.
</p>
<p>
Astride her, he raised his knife to kill her. She was pointing with
her left hand, frantically, at something that lay on the ground
beside them, and saying, "No, no, little boy, no, no—" Then she
just whimpered, knowing that his knife was poised, and kept stabbing
her finger at the ground. Because she was helpless, he paused, looked,
and saw a squirrel lying there, head bleeding.
</p>
<p>
He understood. She hadn't been trying to kill him. She had seen the
squirrel, and gotten it.
</p>
<p>
He decided to kill her anyway. For the squirrel.

</p>
</p>
<p>
"
<i>
No, little boy-
</i>
"
</p>
<p>
He hesitated.
</p>
<p>
"
<i>
Friends
</i>
, little boy...."
</p>
<p>
After a moment he rolled off her.
</p>
<p>
She sat up, cheeks tear-streaked. She pointed at the squirrel, then at
</p>
<p>
Steven, and shook her head violently.
</p>
<p>
Knife threatening her, he reached out to pick up the squirrel.
</p>
<p>
<i>
Mine
</i>
, the knife said.
</p>
<p>
At that point the squirrel, which had been only momentarily stunned by
</p>
<p>
her blow, shook itself and scrambled for the bushes. His hand missed
</p>
<p>
it by inches. He lunged for it, flat on his belly, and caught its tail
</p>
<p>
with one hand.
</p>
<p>
As another squirrel's tail had done long ago, this one broke off.
</p>
<p>
He lay there for a moment, snarling, the tail in his hand; and when
</p>
<p>
he turned over, the girl had her knife in her hand and her teeth were
</p>
<p>
bared at him.
</p>
<p>
Blue eyes blazing, he got to his feet, expecting her to attack any

second. He dropped the tail. He crouched to fight.

</p>

\r\n\r\n

<p>

She didn't attack.

</p>

\r\n\r\n

<p>

Nor, for some reason, did he.

</p>

\r\n\r\n

<p>

The way her chapped lips were stretched back over her teeth disturbed\r\nhim ... or rather it unsettled him, because it

<i>

didn't

</i>

disturb him. At\r\nleast not the way a snarl did. It didn't put him on guard, every muscle\r\nintense; it didn't make him feel that he had to fight. She didn't look\r\nangry or eager to have anything he had or ready to kill ... he didn't\r\nknow the word for how she looked.

</p>

\r\n\r\n

<p>

She weighed her knife in her hand. Then she struck it in her belt, and\r\nsaid again, "

<i>

Friends

</i>

, little boy."

</p>

\r\n\r\n

<p>

He stared. At her strange snarl that wasn't a snarl. At the knife she\r\nhad put away. He had never seen anyone do that before.

</p>

\r\n\r\n

<p>

Slowly he felt his own lips curl back into an expression he could\r\nhardly remember. He felt the way he felt sometimes late at night when,\r\nsafe and alone in his room, he would play a little with his toys. He\r\ndidn't feel like killing her any more. He felt like ... like

<i>

friends

</i>

.

</p>

\r\n\r\n

<p>

He looked at the squirrel tail lying on the ground. He worried it with\r\na foot, then kicked it away. It wasn't good to eat—and he thought of\r\nhow the squirrel had looked scrambling off, and felt his lips stretch\r\ntighter.

</p>

\r\n\r\n

<p>

He tried to think of the word. Finally it came.

</p>

\r\n\r\n

<p>

"Funny squirrel," he said, through his tight lips.

</p>

<p>
He stuck his knife in his belt.
</p>

<p>
They stared at each other, feeling each other's pleasure at the
making.
</p>

<p>
She bent, picked up a small stone and flipped it at him. He made no
attempt to catch it, and it struck him on the hip. He half-crouched,
stantly wary, hand on knife. A thrown stone had only one meaning.
</p>

<p>
But she was still smiling, and she shook her head. "No, little boy,"
she said. "
<i>
Play.
</i>
" She tossed another stone, high in the air.
</p>

<p>
He reached out and caught it as it descended.
</p>

<p>
He started to toss it back to her, and remembered only at the last
moment not to hurl it at her head.
</p>

<p>
He tossed it, and she missed it.
</p>

<p>
He grinned at her.
</p>

<p>
She tossed another one back at him, and he missed, and they both
grinned.
</p>

<p>
Then he grunted, remembering something from the dim past. He picked up
a small fallen branch from the ground.
</p>

<p>
When he looked up, she was poised to run.
</p>

<p>
This time he shook his head, waving the stick gently. "Play," he said.
</p>

<p>
She threw another stone, eyes warily on the stick. He swung, missed.
</p>
\r\n\r\n

<p>
He hit the next one, and the sharp crack, and the noise the stone\r\nmade rattling off into the bushes, flattened him to the ground, eyes\r\nsearching for sign of men.
</p>
\r\n\r\n

<p>
She was beside him. He smelled her body and her breath.
</p>
\r\n\r\n

<p>
They saw no one.
</p>
\r\n\r\n

<p>
He looked at her lying beside him. She was grinning again.
</p>
\r\n\r\n

<p>
Then she laughed; and, without knowing what he was doing or why—he\r\ncould hardly remember ever doing it before—he laughed too.
</p>
\r\n\r\n

<p>
It felt good. Like the snarl that wasn't a snarl, only better. It\r\nseemed to come from way inside. He laughed again, sitting up. He\r\nlaughed a third time, tight hesitant sounds that came out of his throat\r\nand stretched his lips until they wouldn't stretch any more.
</p>
\r\n\r\n

<p>
Tears were on his cheeks, and he was laughing very tightly, very\r\nsteadily, and she was laughing the same way, and they lay that way for\r\na few minutes until they were trembling and their stomachs ached, and\r\nthe laughter was almost crying.
</p>
\r\n\r\n

<p>
He saw her face, so close by, and felt an impulse. He rolled over and\r\nstarted to scuffle with her. When she realized that he wasn't trying to\r\nkill her, that he was playing, she scuffled back, rubbing his face in\r\nthe dirt harder than he had hers, because she was stronger.
</p>
\r\n\r\n

<p>
He spat dirt and grass and grinned at her, and they fell apart.
</p>
\r\n\r\n

<p>
Footsteps.
</p>
\r\n\r\n

<p>
His knife was out and ready, and so was hers.
</p>

\r\n\r\n

<p>

Legs moved on the other side of the bushes, stopped.

</p>

\r\n\r\n

<p>

Silently, almost stepping between the leaves on the ground, Steven and

\r\nthe girl crawled out the other side of the bushes and took up position

s\r\nagainst tree trunks, just enough of their heads protruding to see around.

</p>

\r\n\r\n

<p>

A man came probing into the head-high bushes from the path side ... \r\n

stood there a moment looking around, only a vague brown shape through \r\n

the leaves.

</p>

\r\n\r\n

<p>

He grunted, went out to the path again, walked on.

</p>

\r\n\r\n

<p>

Steven and the girl followed him by his sounds, trailing about twenty \r\n

feet behind, until Steven got a good look at him when he passed an open

\r\nspace between the bushes.

</p>

\r\n\r\n

<p>

He was a big man in brownish-green clothes—new-looking clothes, not \r\n

full of holes. He walked almost carelessly, as if he didn't care who \r\n

heard him.

</p>

\r\n\r\n

<p>

And Steven saw the reason for that.

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\r\n\r\n

<p>

Men with guns always walked louder. This man wore a holstered gun at \r\n

his belt, and carried another one—a long gun something like a rifle, \r\n

only bulkier.

</p>

\r\n\r\n

<p>

Steven's lips curled. He darted a look at the girl. Across his mind \r\n

flashed the vague idea of sharing whatever the man had with her, but he

\r\n

didn't know how to let her know.

</p>

\r\n\r\n

<p>

She was looking at the guns, eyes wide. Afraid. She shook her head.

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<p>

Steven snarled silently at her, put a hand on her chest, shoved gently.

</p>

\r\n\r\n

<p>

She stayed there as he moved on.

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\r\n\r\n

<p>

Silently he drifted from tree to tree, bush to bush, getting ahead of\r\nhis quarry. The big man\'s shoes clumped noisily along. Steven had no\r\ntrouble telling where he was.

</p>

\r\n\r\n

<p>

At last Steven spotted a good tree, a thick-foliaged one about forty\r\nfeet up the path, where the sun would be in the man\'s eyes.

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<p>

If the man kept following the path—

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<p>

He did.

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<p>

And when he passed below the tree, Steven was waiting on the low branch\r\nthat overhung the path—waiting with his face taut and his eyes staring\r\nand his knife ready. One stab at the base of the skull, and the guns\r\nwould be his.

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\r\n\r\n

<p>

He jumped.

</p>

\r\n\r\n

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\r\n\r\n

<p>

They brought them into the camp. By this time Steven and the girl had\r\nfound that their captors were far too strong and too many to escape\r\nfrom, and quite adept at protecting themselves from the foulest of\r\nblows. But still the two of them struggled now and then, panting like\r\nanimals.

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\r\n\r\n

<p>

Everything at the camp, which was over on Long Island, near Flushing\r\nBay, was neat and trim and olive-drab, and it was almost evening now,\r\nand as the jeep rolled up the avenue between the rows of tents Steven\r\nand the girl stopped struggling to blink at the first artificial lights\r\nthey\'d seen in a very long time.

</p>

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<p>

In the lieutenant\'s tent, the big man Steven had tried to kill said to\r\nthe man behind the desk, "Like a jaguar, sir. Right out of the tree\r\nhe came. I had him spotted, of course, but he did a peach of a job of\r\ntrailing me. If I

<i>

hadn\'t

</i>

been ready for him, I\'d be a dogtag."

</p>

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<p>

The lieutenant looked at Steven and the girl, standing before him, and the four soldiers who stood behind them, one to each strong dirty young arm.

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<p>

"The others got the girl, eh?" he said.

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<p>

"Yessir. When we first heard 'em, I started making enough noise to cover the rest of the boys." The sergeant grinned. "I swear, he came at me as neat as any commando ever did."

</p>

\r\n\r\n

<p>

"God," said the lieutenant, and closed his eyes for a moment. "What a thing. Let this war be the last one, Sipich. So

<i>

this

</i>

is what happened to New York in six years. Maniacs. Murderers. Worst of all, wolf-children. And the rest of the country...."

</p>

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<p>

"Well, we're back now, sir. We can start putting it all back together _"

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\r\n\r\n

<p>

"God," said the lieutenant again. "Do you think the pieces will fit?" He looked at Steven. "What is your name, son?"

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<p>

Steven snarled.

</p>

\r\n\r\n

<p>

"Take them away," said the lieutenant wearily. "Feed them. Delouse them. Send them to the Georgia camp."

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\r\n\r\n

<p>

"They'll be okay, sir. In a year or so they'll be smiling all over the place, taking an interest in things. Kids are kids, sir."

</p>

\r\n\r\n

<p>

"

<i>

Are

</i>

they?

<i>

These

</i>

kids, Sipich? ... I don't know. I just don't know."

</p>

\r\n\r\n

<p>
The sergeant gave an order, and the four soldiers urged Steven and the girl out of the tent. There was a bleat of pain as one of the children placed a kick.
</p>
<p>
The sergeant started to follow his men out. At the tent flaps he paused. "Sir ... maybe you'd like to know: we found these two because they were playing and laughing. We were scouting the park, and heard them laughing."
</p>
<p>
"They were?" said the lieutenant, looking up from the forms he was filling out. "
<i>
Playing?
</i>
"
</p>
<p>
"It's still there, sir. Deep down. It has to be."
</p>
<p>
"I see," said the lieutenant slowly. "Yes, I suppose it is. And now we've got to dig it up."
</p>
<p>
"Well ... we buried it, sir."
</p>
<pre>
End of the Project Gutenberg EBook of Little Boy, by Harry Neal
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produce our new eBooks, and how to\n\nsubscribe to our email newsletter to  
hear about new eBooks.\n\n\n\n\n\n\n</pre>\n\n</body>\n\n</html>\n'
```

With a BeautifulSoup object, we can easily search through HTML and create lists and other structures.

In [68]:

```
# Number of paragraph tags
len(soup.find_all('p'))
```

Out[68]:

165

In [69]:

```
# Create list of all paragraphs
paragraph_list = soup.find_all('p')
paragraph_list[100]
```

Out[69]:

<p>Slowly he felt his own lips curl back into an expression he could\r\nhardly remember. He felt the way he felt sometimes late at night when,\r\nsafe and alone in his room, he would play a little with his toys. He\r\ndidn't feel like killing her any more. He felt like ... like <i>friends</i>.

We can also extract all the text from a page and use it to create a bag of words or other measures.

In [70]:

```
# Extract all text from page
text = soup.get_text()
text[:100]
```

Out[70]:

"b'\\r\\n\\n\\r\\n\\n \\r\\n\\n \\r\\n\\n \\r\\n\\n \\r\\n\\n The Project Gut
enberg eBook of Little Boy, by Harry Ne"

In [71]:

```
import string
from collections import defaultdict

letters = defaultdict(int)
punctuation = set(string.punctuation)

for char in text:
    if char not in punctuation:
        letters[char] += 1

letters.items()
```

Out[71]:

```
dict_items([('b', 606), ('r', 3584), ('n', 3875), (' ', 8120), ('T', 160),
('h', 2200), ('e', 4941), ('P', 119), ('o', 2988), ('j', 116), ('c', 981),
('t', 3686), ('G', 119), ('u', 1049), ('g', 866), ('B', 61), ('k', 453),
('f', 802), ('L', 74), ('i', 2376), ('l', 1371), ('y', 759), ('H', 138),
('a', 2751), ('N', 74), ('d', 1741), ('m', 844), ('1', 68), ('0', 23),
('2', 16), ('x', 54), ('s', 1993), ('p', 660), ('5', 28), ('4', 19), ('9',
12), ('w', 849), ('3', 25), ('6', 10), ('7', 18), ('I', 135), ('v', 315),
('z', 12), ('8', 16), ('E', 130), ('U', 53), ('S', 181), ('Y', 40), ('A',
110), ('R', 71), ('D', 49), ('J', 7), ('C', 48), ('O', 71), ('F', 75),
('K', 11), ('W', 34), ('M', 33), ('-', 54), ('q', 42), ('V', 8), ('X', 2),
('Q', 1)])
```

Creating Our Own Dataset



In previous lectures and notebooks, we wrote our own parser method to extract parts of the text. Here is a trivial example of how you can do the same with BeautifulSoup using a list of [Top 10 Chefs by Gazette Review](https://gazettereview.com/2017/04/top-10-chefs/) (<https://gazettereview.com/2017/04/top-10-chefs/>).

In [72]:

```
# Open and extract HTML from the webpage
f = urlopen("https://gazettereview.com/2017/04/top-10-chefs/")
html = str(f.read())
soup = BeautifulSoup(html, 'html.parser')
print(soup.prettify())
```

```

b'
<!DOCTYPE doctype html >
\n
<!--[if IE 8]><html class="ie8" lang="en"> <![endif]-->
\n
<!--[if IE 9]><html class="ie9" lang="en"> <![endif]-->
\n
<!--[if gt IE 8]><!-->
<html lang="en-US" prefix="og: http://ogp.me/ns#">
<!--<![endif]-->
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  Top 10 Chefs In The World - The Best in 2018 - Gazette Review
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```



```

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in 2018 Comments Feed" type="application/rss+xml"/>
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e.min.js"}};\\n\\t\\t\\t!function(a,b,c){function d(a,b){var c=String.fromCharCode;l.clearRect(0,0,k.width,k.height),l.fillText(c.apply(this,a),0,0);var d=k.toDataURL();l.clearRect(0,0,k.width,k.height),l.fillText(c.apply(this,b),0,0);var e=k.toDataURL();return d===e}function e(a){var b;if(!1||!1.fillText)return!1;switch(l.textBaseline="top",l.font="600 32px Arial",a){case "flag":return!(b=d([55356,56826,55356,56819],[55356,56826,8203,55356,56819]))&&(b=d([55356,57332,56128,56423,56128,56418,56128,56421,56128,56430,56128,56423,56128,56447],[55356,57332,8203,56128,56423,8203,56128,56418,8203,56128,56421,8203,56128,56430,8203,56128,56423,8203,56128,56447]),!b);case "emoji":return b=d([55358,56760,9792,65039],[55358,56760,8203,9792,65039]),!b)return!1}function f(a){var c=b.createElement("script");c.src=a,c.defer=c.type="text/javascript",b.getElementsByTagName("head")[0].appendChild(c)}var g,h,i,j,k=b.createElement("canvas"),l=k.getContext&&k.getContext("2d");for(j=Array("flag","emoji"),c.supports={everything:!0,everythingExceptFlag:!0},i=0;i<j.length;i++)c.supports[j[i]]=e(j[i]),c.supports.everything=c.supports.everything&&c.supports[j[i]],"flag"!==j[i]&&(c.supports.everythingExceptFlag=c.supports.everythingExceptFlag&&c.supports[j[i]]);c.supports.everythingExceptFlag=c.supports.everythingExceptFlag&&c.supports.flag,c.DOMReady=!1,c.readyCallback=function(){c.DOMReady=!0},c.supports.everything|| (h=function(){c.readyCallback()},b.addEventListener?(b.addEventListener("DOMContentLoaded",h,!1),a.addEventListener("load",h,!1)): (a.attachEvent("onload",h),b.attachEvent("onreadystatechange",function(){"complete"===b.readyState&&c.readyCallback()})),g=c.source|| {},g.concatemoji?f(g.concatemoji):g.wpemoji&&g.twemoji&&(f(g.twemoji),f(g.wpemoji)))}(window,document,window._wpemojiSettings);
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  advanced_ads_ready=function(){var fns=[],listener,doc=typeof document

```

```

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<script data-optimized="\`1\`" src="\`https://gazettereview.com/min/49c9c.js\`" type="\`text/javascript\`">
</script>
<script data-optimized="\`1\`" src="\`https://gazettereview.com/min/1d53e.js\`" type="\`text/javascript\`">
</script>
<script data-optimized="\`1\`" src="\`https://gazettereview.com/min/c8934.js\`" type="\`text/javascript\`">
</script>
<script type="\`text/javascript\`">
/* */\nvar advanced_ads_responsive = {"reload_on_resize":"1"};\n/*
*/
</script>
<script data-optimized="\`1\`" src="\`https://gazettereview.com/min/887c6.js\`" type="\`text/javascript\`">
</script>
<script data-optimized="\`1\`" src="\`https://gazettereview.com/min/7cb9f.js\`" type="\`text/javascript\`">
</script>
<link href="\`https://gazettereview.com/wp-json/\`" rel="\`https://api.w.org/\`"/>
<link href="https://gazettereview.com/xmlrpc.php?rsd" rel="EditURI" title="RSD" type="application/rsd+xml"/>
<link href="https://gazettereview.com/wp-includes/wlwmanifest.xml" rel="wlwmanifest" type="application/wlwmanifest+xml"/>
<meta content="WordPress 4.9.12" name="generator"/>
<link href="\`https://gazettereview.com/?p=65275\`" rel="\`shortlink\`"/>
<link href="https://gazettereview.com/wp-json/oembed/1.0/embed?url=https%3A%2F%2Fgazettereview.com%2F2017%2F04%2Ftop-10-chefs%2F" rel="alternate" type="application/json+oembed"/>
<link href="https://gazettereview.com/wp-json/oembed/1.0/embed?url=https%3A%2F%2Fgazettereview.com%2F2017%2F04%2Ftop-10-chefs%2F&format=xml" rel="alternate" type="text/xml+oembed"/>

```

localhost:8888/nbconvert/html/Documents/Mini Project/Mini Project.ipynb?download=false

```

urn tdLocalCache.data[resource_id];\n                                },\n                                s
et: function (resource_id, cachedData) {\n                                tdLocalCach
e.remove(resource_id);\n                                tdLocalCache.data[resource_id]
= cachedData;\n                                }\n                                };\n                                }());\n\n\n\n
\nvar td_viewport_interval_list=[{"limitBottom":767,"sidebarWidth":228},
{"limitBottom":1018,"sidebarWidth":300},{"limitBottom":1140,"sidebarWidth":324}];\nvar td_animation_stack_effect="type0";\nvar tds_animation_stack
=true;\nvar td_animation_stack_specific_selectors=".entry-thumb, img";\nvar td_animation_stack_general_selectors=".td-animation-stack img, .post-im
g";\nvar td_ajax_url="https://\\//gazettereview.com\\//wp-admin\\//admin-ajax.php?td_theme_name=Newspaper&v=7.4";\nvar td_get_template_directory_uri
="https://\\//gazettereview.com\\//wp-content\\//themes\\//Newspaper";\nvar tds_snap_menu="";\nvar tds_logo_on_sticky="";\nvar tds_header_style="";\nvar td_please_wait="Please wait...";\nvar td_email_user_pass_incorrect="User
or password incorrect!";\nvar td_email_user_incorrect="Email or username incorrect!";\nvar td_email_incorrect="Email incorrect!";\nvar tds_more_articles_on_post_enable="";\nvar tds_more_articles_on_post_time_to_wait="";\nvar tds_more_articles_on_post_pages_distance_from_top=0;\nvar tds_theme_color_site_wide="#4db2ec";\nvar tds_smart_sidebar="";\nvar tdThemeName="Newspaper";\nvar td_magnific_popup_translation_tPrev="Previous (Left arrow key)";\nvar td_magnific_popup_translation_tNext="Next (Right arrow key)";\nvar td_magnific_popup_translation_tCounter="%curr% of %total%";\nvar td_magnific_popup_translation_ajax_tError="The content from %url% could not be loaded.";
\nvar td_magnific_popup_translation_image_tError="The image #%curr% could not be loaded.";
\nvar td_ad_background_click_link="";\nvar td_ad_background_click_target="";
</script>
<script async="" src="https://www.googletagmanager.com/gtag/js?id=UA-60151807-1">
</script>
<script>
window.dataLayer = window.dataLayer || [];\n function gtag(){dataLayer.push(arguments);}\n gtag('js', new Date());\n\n gtag('config', 'UA-60151807-1');
</script>
<noscript>
<style type="text/css">
.wpb_animate_when_almost_visible { opacity: 1; }
</style>
</noscript>
<meta name="'ir-site-verification-token'" value="'-2083755028'"/>
<meta content="76d9d0027d061b40ec8767bd8952c207" name="p:domain_verification"/>
<div id="amzn-assoc-ad-b8c4c6f6-9f13-4405-9c1e-7591feda7338">
</div>
<script async="" src="//z-na.amazon-adsystem.com/widgets/onejs?MarketPlace=US&adInstanceId=b8c4c6f6-9f13-4405-9c1e-7591feda7338">
</script>
<script type="text/javascript">
amzn_assoc_ad_type = "link_enhancement_widget";\n amzn_assoc_tracking_id = "gretwt-20";\n amzn_assoc_linkid = "b642a5e791b065d2e1584aca55d8fde9";\n amzn_assoc_placement = "";\n amzn_assoc_marketplace = "amazon";\n amzn_assoc_region = "US";
</script>
<script src="//ws-na.amazon-adsystem.com/widgets/q?ServiceVersion=20070822&Operation=GetScript&ID=OneJS&WS=1&MarketPlace=US">
</script>
<body class="post-template-default single single-post postid-65275 single-format-standard top-10-chefs wpb-js-composer js-comp-ver-4.12.1 vc_responsive td-animation-stack-type0 td-full-layout" itemscope="itemscope" itemtype="https://schema.org/WebPage">

```

```

<div class="td-scroll-up">
  <i class="td-icon-menu-up">
    </i>
  </div>
<div class="td-menu-background">
</div>
<div id="td-mobile-nav">
  <div class="td-mobile-container">
    <div class="td-menu-socials-wrap">
      <div class="td-menu-socials">
      </div>
      <div class="td-mobile-close">
        \n
        <a href="#">
          <i class="td-icon-close-mobile">
            </i>
          </a>
        </div>
      </div>
    <div class="td-mobile-content">
      <div class="menu-td-header-container">
        <ul class="td-mobile-main-menu" id="menu-td-header">
          <li class="menu-item menu-item-type-post_type menu-item-object-
page menu-item-home menu-item-first menu-item-12" id="menu-item-12">
            <a href="https://gazettereview.com/">
              Home
            </a>
          </li>
          <li class="menu-item menu-item-type-taxonomy menu-item-object-c
ategory menu-item-85" id="menu-item-85">
            <a href="https://gazettereview.com/category/us/">
              US
            </a>
          </li>
          <li class="menu-item menu-item-type-taxonomy menu-item-object-c
ategory menu-item-86" id="menu-item-86">
            <a href="https://gazettereview.com/category/world/">
              World
            </a>
          </li>
          <li class="menu-item menu-item-type-taxonomy menu-item-object-c
ategory menu-item-78" id="menu-item-78">
            <a href="https://gazettereview.com/category/business/">
              Business
            </a>
          </li>
          <li class="menu-item menu-item-type-taxonomy menu-item-object-c
ategory current-post-ancestor current-menu-parent current-post-parent menu
-item-79" id="menu-item-79">
            <a href="https://gazettereview.com/category/entertainment/">
              Entertainment
            </a>
          </li>
          <li class="menu-item menu-item-type-taxonomy menu-item-object-c
ategory menu-item-81" id="menu-item-81">
            <a href="https://gazettereview.com/category/health/">
              Health
            </a>
          </li>
          <li class="menu-item menu-item-type-taxonomy menu-item-object-c
ategory menu-item-82" id="menu-item-82">

```

```

    <a href="https://gazettereview.com/category/science/">
      Science
    </a>
  </li>
  <li class="menu-item menu-item-type-taxonomy menu-item-object-c
ategory menu-item-83" id="menu-item-83">
    <a href="https://gazettereview.com/category/sports/">
      Sports
    </a>
  </li>
  <li class="menu-item menu-item-type-taxonomy menu-item-object-c
ategory menu-item-84" id="menu-item-84">
    <a href="https://gazettereview.com/category/technology/">
      Technology
    </a>
  </li>
</ul>
</div>
</div>
</div>
</div>
<div class="td-search-background">
</div>
<div class="td-search-wrap-mob">
  <div aria-labelledby="td-header-search-button" class="td-drop-down-
search">
    <form action="https://gazettereview.com/" class="td-search-form" m
ethod="get">
      <div class="td-search-close">
        \n
        <a href="#">
          <i class="td-icon-close-mobile">
            </i>
          </a>
        </div>
        <div class="td-search-input" role="search">
          \n
          <span>
            Search
          </span>
          \n
          <input autocomplete="off" id="td-header-search-mob" name="s" typ
e="text" value=""/>
        </div>
      </form>
      <div id="td-aj-search-mob">
      </div>
    </div>
  </div>
  <div id="td-outer-wrap">
    <div class="td-header-wrap td-header-style-1">
      <div class="td-header-top-menu-full">
        <div class="td-container td-header-row td-header-top-menu">
          <div class="top-bar-style-1">
            <div class="td-header-sp-top-menu">
              <div class="td_data_time">
                <div>
                  Wednesday, November 13, 2019
                </div>
              </div>
            </div>
          </div>
          <div class="menu-top-container">

```

```

        <ul class="top-header-menu" id="menu-td_demo_top">
            <li class="menu-item menu-item-type-custom menu-item-object-
custom menu-item-home menu-item-first td-menu-item td-normal-menu menu-ite
m-714" id="menu-item-714">
                <a href="https://gazettereview.com">
                    Home
                </a>
            </li>
            <li class="menu-item menu-item-type-custom menu-item-object-
custom td-menu-item td-normal-menu menu-item-710" id="menu-item-710">
                <a href="https://gazettereview.com/about">
                    About
                </a>
            </li>
            <li class="menu-item menu-item-type-custom menu-item-object-
custom td-menu-item td-normal-menu menu-item-711" id="menu-item-711">
                <a href="https://gazettereview.com/our-team">
                    Our Team
                </a>
            </li>
            <li class="menu-item menu-item-type-custom menu-item-object-
custom td-menu-item td-normal-menu menu-item-712" id="menu-item-712">
                <a href="https://gazettereview.com/about">
                    Careers
                </a>
            </li>
            <li class="menu-item menu-item-type-post_type menu-item-obje
ct-page td-menu-item td-normal-menu menu-item-709" id="menu-item-709">
                <a href="https://gazettereview.com/contact/">
                    Contact
                </a>
            </li>
        </ul>
    </div>
    </div>
    <div class="white-popup-block mfp-hide mfp-with-anim" id="login-
form">
        <div class="td-login-wrap">
            \n
            <a class="td-back-button" href="#">
                <i class="td-icon-modal-back">
                    </i>
                </a>
            <div class="td-login-form-div td-display-block" id="td-login-d
iv">
                <div class="td-login-panel-title">
                    Sign in
                </div>
                <div class="td-login-panel-descr">
                    Welcome! Log into your account
                </div>
                <div class="td_display_err">
                </div>
                <div class="td-login-inputs">
                    <input class="td-login-input" id="login_email" name="login_e
mail" required="" type="text" value=""/>
                    <label>
                        your username
                    </label>
                </div>

```

```

        <div class="td-login-inputs">
            <input class="td-login-input" id="login_pass" name="login_pa
ss" required="" type="password" value=""/>
            <label>
                your password
            </label>
        </div>
        \n
        <input class="wpb_button btn td-login-button" id="login_butto
n" name="login_button" type="button" value="Login"/>
        <div class="td-login-info-text">
            <a href="#" id="forgot-pass-link">
                Forgot your password? Get help
            </a>
        </div>
        </div>
        <div class="td-login-form-div td-display-none" id="td-forgot-p
ass-div">
            <div class="td-login-panel-title">
                Password recovery
            </div>
            <div class="td-login-panel-descr">
                Recover your password
            </div>
            <div class="td_display_err">
            </div>
            <div class="td-login-inputs">
                <input class="td-login-input" id="forgot_email" name="forgot
_email" required="" type="text" value=""/>
                <label>
                    your email
                </label>
            </div>
            \n
            <input class="wpb_button btn td-login-button" id="forgot_buttt
on" name="forgot_button" type="button" value="Send My Password"/>
            <div class="td-login-info-text">
                A password will be e-mailed to you.
            </div>
        </div>
    </div>
</div>
</div>
<div class="td-banner-wrap-full td-logo-wrap-full">
    <div class="td-container td-header-row td-header-header">
        <div class="td-header-sp-logo">
            \n
            <a class="td-main-logo" href="https://gazettereview.com/">
                \n
                
                \n
            <span class="td-visual-hidden">
                Gazette Review
            </span>
            \n
        </a>
    </div>
    <div class="td-header-sp-recs">
        <div class="td-header-rec-wrap">

```



```

    </div>
  </div>
</div>
</div>
<div class="td-header-menu-wrap-full">
  <div class="td-header-menu-wrap td-header-gradient">
    <div class="td-container td-header-row td-header-main-menu">
      <div id="td-header-menu" role="navigation">
        <div id="td-top-mobile-toggle">
          <a href="#">
            <i class="td-icon-font td-icon-mobile">
              </i>
            </a>
          </div>
          <div class="td-main-menu-logo td-logo-in-header">
            \n
            <a class="td-mobile-logo td-sticky-disable" href="https://gazettereview.com/">
              \n
              
              \n
            </a>
            \n
            <a class="td-header-logo td-sticky-disable" href="https://gazettereview.com/">
              \n
              
              \n
            </a>
          </div>
          <div class="menu-td-header-container">
            <ul class="sf-menu" id="menu-td-header-1">
              <li class="menu-item menu-item-type-post_type menu-item-object-page menu-item-home menu-item-first td-menu-item td-normal-menu menu-item-12">
                <a href="https://gazettereview.com/">
                  Home
                </a>
              </li>
              <li class="menu-item menu-item-type-taxonomy menu-item-object-category td-menu-item td-normal-menu menu-item-85">
                <a href="https://gazettereview.com/category/us/">
                  US
                </a>
              </li>
              <li class="menu-item menu-item-type-taxonomy menu-item-object-category td-menu-item td-normal-menu menu-item-86">
                <a href="https://gazettereview.com/category/world/">
                  World
                </a>
              </li>
              <li class="menu-item menu-item-type-taxonomy menu-item-object-category td-menu-item td-normal-menu menu-item-78">
                <a href="https://gazettereview.com/category/business/">
                  Business
                </a>
              </li>
              <li class="menu-item menu-item-type-taxonomy menu-item-object-category td-menu-item td-normal-menu menu-item-79">
                <a href="https://gazettereview.com/category/technology/">
                  Technology
                </a>
              </li>
            </ul>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>

```

```

t-category current-post-ancestor current-menu-parent current-post-parent t
d-menu-item td-normal-menu menu-item-79">
    <a href="https://gazettereview.com/category/entertainmen
t/">
        Entertainment
    </a>
</li>
<li class="menu-item menu-item-type-taxonomy menu-item-objec
t-category td-menu-item td-normal-menu menu-item-81">
    <a href="https://gazettereview.com/category/health/">
        Health
    </a>
</li>
<li class="menu-item menu-item-type-taxonomy menu-item-objec
t-category td-menu-item td-normal-menu menu-item-82">
    <a href="https://gazettereview.com/category/science/">
        Science
    </a>
</li>
<li class="menu-item menu-item-type-taxonomy menu-item-objec
t-category td-menu-item td-normal-menu menu-item-83">
    <a href="https://gazettereview.com/category/sports/">
        Sports
    </a>
</li>
<li class="menu-item menu-item-type-taxonomy menu-item-objec
t-category td-menu-item td-normal-menu menu-item-84">
    <a href="https://gazettereview.com/category/technology/">
        Technology
    </a>
</li>
</ul>
</div>
</div>
<div class="td-search-wrapper">
    <div id="td-top-search">
        <div class="header-search-wrap">
            <div class="dropdown header-search">
                \n
                <a class="dropdown-toggle" data-toggle="dropdown" href="#"
id="td-header-search-button" role="button">
                    <i class="td-icon-search">
                        </i>
                    </a>
                    \n
                    <a class="dropdown-toggle" data-toggle="dropdown" href="#"
id="td-header-search-button-mob" role="button">
                        <i class="td-icon-search">
                            </i>
                        </a>
                    </div>
                </div>
            </div>
        </div>
        <div class="header-search-wrap">
            <div class="dropdown header-search">
                <div aria-labelledby="td-header-search-button" class="td-drop
-down-search">
                    <form action="https://gazettereview.com/" class="td-search-f
orm" method="get">
                        <div class="td-head-form-search-wrap" role="search">

```

```

        \n
        <input autocomplete="off" id="td-header-search" name="s" type="text" value="">
        <input class="wpb_button wpb_btn-inverse btn" id="td-header-search-top" type="submit" value="Search"/>
        </input>
        </div>
    </form>
    <div id="td-aj-search">
    </div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
<div class="td-main-content-wrap">
    <div class="td-container td-post-template-default">
        <div class="td-crumb-container">
        </div>
        <div class="td-pb-row">
            <div class="td-pb-span8 td-main-content" role="main">
                <div class="td-ss-main-content">
                    <article class="post-65275 post type-post status-publish format-standard has-post-thumbnail hentry category-entertainment tag-chefs tag-cooking tag-top-10 tag-toplists" id="post-65275" itemscope="" itemtype="https://schema.org/Article">
                        <div class="td-post-header">
                            <ul class="td-category">
                                <li class="entry-category">
                                    <a href="https://gazettereview.com/category/entertainment/">
                                        Entertainment
                                    </a>
                                </li>
                            </ul>
                            <header class="td-post-title">
                                <h1 class="entry-title">
                                    Top 10 Chefs In The World - The Best in 2018
                                </h1>
                                <div class="td-module-meta-info">
                                    <div class="td-post-author-name">
                                        <div class="td-author-by">
                                            By
                                        </div>
                                        Jessica Deml
                                        <div class="td-author-line">
                                            -
                                        </div>
                                    </div>
                                    <time datetime="2017-04-25T00:57:48+00:00">
                                        April 25th, 2017
                                    </time>
                                </div>
                            </header>
                        </div>
                        <div class="td-post-sharing td-post-sharing-top">
                            <div class="td-default-sharing">
                                \n
                                <a class="td-social-sharing-buttons td-social-facebook" href="https://www.facebook.com/gazettereview/">

```

```

f="http://www.facebook.com/sharer.php?u=https%3A%2F%2Fgazettereview.com%2F
2017%2F04%2Ftop-10-chefs%2F" onclick="window.open(this.href, \'mywin\',\'l
eft=50,top=50,width=600,height=350,toolbar=0\'); return false;">
    <i class="td-icon-facebook">
    </i>
    <div class="td-social-but-text">
        Share on Facebook
    </div>
</a>
\n
    <a class="td-social-sharing-buttons td-social-twitter" href
="https://twitter.com/intent/tweet?text=Top+10+Chefs+In+The+World+%E2%80%9
3+The+Best+in+2018&url=https%3A%2F%2Fgazettereview.com%2F2017%2F04%2Ft
op-10-chefs%2F&via=gazettereview">
    <i class="td-icon-twitter">
    </i>
    <div class="td-social-but-text">
        Tweet on Twitter
    </div>
</a>
\n
    <a class="td-social-sharing-buttons td-social-google" href
="http://plus.google.com/share?url=https://gazettereview.com/2017/04/top-1
0-chefs/" onclick="window.open(this.href, \'mywin\',\'left=50,top=50,width
=600,height=350,toolbar=0\'); return false;">
    <i class="td-icon-googleplus">
    </i>
</a>
\n
    <a class="td-social-sharing-buttons td-social-pinterest" hr
ef="http://pinterest.com/pin/create/button/?url=https://gazettereview.com/
2017/04/top-10-chefs/&media=https://gazettereview.com/wp-content/uploa
ds/2017/04/Gordon-Ramsay.jpg&description=These chefs spend their entir
e lifetimes opening restaurants and building their brands and make million
s of dollars from food." onclick="window.open(this.href, \'mywin\',\'left=
50,top=50,width=600,height=350,toolbar=0\'); return false;">
    <i class="td-icon-pinterest">
    </i>
</a>
\n
    <a class="td-social-sharing-buttons td-social-whatsapp" hre
f="whatsapp://send?text=Top+10+Chefs+In+The+World+%E2%80%93+The+Best+in+20
18%20-%20https%3A%2F%2Fgazettereview.com%2F2017%2F04%2Ftop-10-chefs%2F">
    <i class="td-icon-whatsapp">
    </i>
</a>
</div>
</div>
<div class="td-post-content">
    <div class="td-post-featured-image">
        <a data-caption="" href="https://gazettereview.com/wp-conte
nt/uploads/2017/04/Gordon-Ramsay.jpg">
            

</a>

</div>

<div class="gazet-before-content-1" id="gazet-1455148129">

<script async="" src="//pagead2.googlesyndication.com/pagead/js/adsbygoogle.js">

</script>

\n

<ins class="adsbygoogle" data-ad-client="ca-pub-8025516081141479" data-ad-format="auto" data-ad-slot="7381164141" style="display:block">

</ins>

<script>

(adsbygoogle = window.adsbygoogle || []).push({});

</script>

</div>

<p>

For many people, food is more than just a biological need but a completely different experience. Some chefs are so passionate about food they dedicate their lives to creating new sensory experiences. These chefs spend their entire lifetimes opening restaurants and building their brands. As a result, these chefs have become international icons and are respected by even those with a casual interest in food.

</p>

<h2>

10. Anthony Bourdain

</h2>

<p>



<br/>

It's hard to believe that the world renowned chef, writer, and television personality Anthony Bourdain's career started out with him washing dishes as a college dropout. He is now one of the most popular travel and food personalities. Although he is no longer officially a chef, his career spanned several decades. He was a chef at elite restaurants in New York such as the Supper Club, Sullivan's, and One Fifth Avenue.

</p>

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<p>

Bourdain has written several successful novels about his culinary adventures. His shows are well known by his comedic and often profane

ne commentary. He is also famous for the travel and food series No Reservations. Bourdain also has a blue belt in Brazilian Jiu Jitsu.

</p>

<h2>

9. Paul Bocuse

</h2>

<p>



<br/>

\nFrench chef Paul BOCuse is a legend in France and all over the world. Now 91, he has served as mentor to many other world renowned chefs. He is famous for being one of the pioneers of

<em>

nouvelle cuisine

</em>

, a form of cooking that focuses on high quality ingredients instead of richness like the traditional cuisine classique. His most famous restaurant is l\xe2\x80\x99Auberge du Pont de Collonges, which has received a three star Michelin rating.

</p>

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<p>

Bocuse has created the Institute Paul Bocuse Worldwide Alliance to teach students from all over the world. It unites 13 universities throughout the world and sends its best students to a course taught by Bocuse himself.

</p>

<h2>

8. Alain Ducasse

</h2>

<p>



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 \nAlain Ducasse is a an idol in the world of French cuisin
e. He is the first chef to have three restaurants with three Michelin star
s each. He began his career as a chef for the Hotel De Paris in Monte Carl
o, Monaco. Revenue from Ducasse\xe2\x80\x99s restaurants exceeds 15 millio
n per year.
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</p>
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<p>
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```
 Ducasse has opened many successful and innovative restauran
ts in his lifetime. He has earned 21 total Michelin stars. He has also bee
n featured on the famous TV show Masterchef.
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<h2>
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```
 7. Emeril Lagasse
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</h2>
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<p>
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```

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```
\nAlthough many elite chefs are only known by name to the p
ublic, Emeril Lagasse\xe2\x80\x99s loud and larger than life persona has m
ade him an international icon. Catchphrases such as \xe2\x80\x9cBam!\xe2\x
80\x9d and \xe2\x80\x9ckick it up a notch\xe2\x80\x9d made him a hit with
audiences from the beginning.
```

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</p>
```

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<p>
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```
 His cooking style is a fusion of Creole and Cajun which he
calls \xe2\x80\x9cNew New Orleans\xe2\x80\x9d. His television appearance
s, restaurants, and endorsements earn over $150 million in revenue per yea
r.
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</p>
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<h2>
```

```
 6. Vikas Khanna
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</h2>
```

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<p>
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\nMost famous Chefs are American or French, but Vikas Khanna is one of the first Indian Chefs to receive international acclaim. Since 2011, his main restaurant Junoon in New York City has received a Michelin star. Khanna has also collaborated with many other famous chefs.

</p>

<p>

Vikas Khanna is known for creating the most expensive cookbook in the world. The book was created over a span of 12 years and details the rich history of Indian cuisine. The book costs \$13,000, and only 12 have ever been made. Khanna has personally gifted it to famous people including Queen Elizabeth.

</p>

<h2>

5. Marco Pierre White

</h2>

<p>

\nBritish star chef Marco Pierre White permanently changed the way the world looked at food. By the age of 33, he had won three Michelin stars, making him the youngest chef to do so. He blends classical British, French, and Italian cooking together to create his unique style.

</p>

<p>

Marco Pierre White has been featured on popular shows like Masterchef and Hell's Kitchen. White returned his stars later in his career, citing negative impacts on his personal life. He is nonetheless highly respected.

</p>

<h2>

4. Heston Blumenthal

</h2>

<p>

\nMost chefs primarily focus on their food being beautiful and delicious. Blumenthal is one of the first chefs to take a scientific approach to cooking. He also creates food that interacts with all of the senses. His unique approach to cooking has earned his restaurant, the Fat Duck, three Michelin stars.

</p>

<p>

The British chef's advocacy for a scientific understanding of food has earned him a spot as fellow in the Royal Society of Chemistry. Blumenthal has also pioneered many unique recipes. He is known for pairing food with molecular similarities together, even if such pa

irings seem bizarre.

</p>

<h2>

3. Wolfgang Puck

</h2>

<p>

After moving to the USA at age 24, Austrian celebrity chef and culinary innovator Wolfgang Puck was inspired. He created his own unique style of cooking that blended Italian and American cooking styles together with Californian ingredients. His first restaurant, Spago, received a large amount of critical acclaim.

</p>

<p>

Wolfgang Puck has released multiple cookbooks and appeared on many popular cooking shows. He has even acted in famous TV shows. In 2017, he was given a star on the Hollywood Walk of Fame.

</p>

<h2>

2. Jamie Oliver

</h2>

<p>

British star Jamie Oliver is an icon in Britain and beyond. Unlike most chefs, his style of cooking is primarily British. His personality and skill have earned him numerous endorsements and millions of dollars. He is primarily known for his cooking shows and advocacy of healthy eating.

</p>

<p>

In 2002, Oliver released the five part series Jamie's Kitchen. He is also the creator of The Naked Chef. Jamie Oliver has also pushed for healthy eating in schools. Oliver was the face of British supermarket chain Sainsbury's until 2005. He has been featured in hundreds of commercials.

</p>

<h2>

1. Gordon Ramsay

</h2>

<p>

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\nWith a staggering net worth of over 60 million dollars and an unparalleled international reach, Gordon Ramsay is by far the most successful chef in the world. His restaurants have received a total of 16 Michelin Stars. Ramsay is known for his fiery hot attitude and zero tolerance approach to incompetence in the kitchen.

</p>

<p>

Despite his seemingly angry persona, Gordon Ramsay keeps his cool outside of the kitchen. He has actually retained 85% of his staff since the beginning of his career. He has also been married since 1996 and has five kids. Ramsay is the first chef to appoint female head chefs (Claire Smith and Angela Hartnett) to a restaurant with three Michelin stars.

</p>

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```

```

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      This is literally one of the worst list I have ever seen
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      sts
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? Don’t think so
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<div class="comment-pagination">
</div>
<div class="comment-respond" id="respond">
  <h3 class="comment-reply-title" id="reply-title">
    LEAVE A REPLY
  <small>
    <a href="/2017/04/top-10-chefs/#respond" id="cancel-commen
t-reply-link" rel="nofollow" style="display:none;">
      Cancel reply
    </a>
  </small>
</h3>
  <form action="https://gazettereview.com/wp-comments-post.ph
p" class="comment-form" id="commentform" method="post" novalidate="">
    <div class="clearfix">
    </div>
    <p class="comment-form-input-wrap td-form-comment">
      <textarea aria-required="true" autocomplete="nope" cols="4
5" id="b8c30cea33" name="289cbc443d" placeholder="Comment:" rows="8"></tex
tarea>
      <textarea aria-hidden="true" autocomplete="nope" id="comme
nt" name="comment" style="clip:rect(1px, 1px, 1px, 1px);position:absolute
!important;white-space:nowrap;height:1px;width:1px;overflow:hidden;" tabi
ndex="-1"></textarea>

```

```

        <script type="text/javascript">
            document.getElementById("comment").setAttribute( "id", "a
0b85009c492a18153e3094d8ebc5394" );document.getElementById("b8c30cea33").s
etAttribute( "id", "comment" );
        </script>
    </p>
    <p class="comment-form-input-wrap td-form-author">
        \n
        <span class="comment-req-wrap">
            \n
            <input class="" id="author" name="author" placeholder="Na
me:" size="30" type="text" value=""/>
        </span>
    </p>
    <p class="comment-form-input-wrap td-form-email">
        \n
        <span class="comment-req-wrap">
            <input class="" id="email" name="email" placeholder="Emai
l:" size="30" type="text" value=""/>
        </span>
    </p>
    <p class="form-submit">
        <input class="submit" id="submit" name="submit" type="subm
it" value="Post Comment">
        <input id="\comment_post_ID\" name="\comment_post_ID
\" type="\hidden\" value="\65275\"/>
        \n
        <input id="\comment_parent\" name="\comment_parent\"
type="\hidden\" value="\0\"/>
    </input>
    </p>
    <p style="display: none;">
        <input id="akismet_comment_nonce" name="akismet_comment_no
nce" type="hidden" value="130dab10b1"/>
    </p>
    <p style="display: none;">
        <input id="ak_js" name="ak_js" type="hidden" value="137"/>
    </p>
</form>
</div>
</div>
</div>
</div>
<div class="td-pb-span4 td-main-sidebar" role="complementary">
    <div class="td-ss-main-sidebar">
        <aside class="widget widget_text">
            <div class="textwidget">
                <script async="" src="//pagead2.googlesyndication.com/pagea
d/js/adsbygoogle.js">
            </script>
            \n
            <ins \ndata-ad-client="ca-pub-8025516081141479" \ndata-ad-sl
ot="3343562542" \nstyle="display:inline-block;width:300px;height:600px" cl
ass="adsbygoogle">
            </ins>
            <script>
                (adsbygoogle = window.adsbygoogle || []).push({});
            </script>
            </div>
        </aside>
        <div class="td_block_wrap td_block_2 td_block_widget td_uid_2_

```

```
5dcc051597f61_rand td-pb-border-top" data-td-block-uid="td_uid_2_5dcc051597f61">
```

```

    <script>
        var block_td_uid_2_5dcc051597f61 = new tdBlock();\nblock_td_uid_2_5dcc051597f61.id = "td_uid_2_5dcc051597f61";\nblock_td_uid_2_5dcc051597f61.attrs = \'{ "limit": "1", "sort": "random_7_day", "post_ids": "", "tag_slug": "", "authors_id": "", "installed_post_types": "", "category_id": "", "category_ids": "1,9,10,11,12,13,14,15,16,18", "custom_title": "Most Read", "custom_url": "", "show_child_cat": "", "sub_cat_ajax": "", "ajax_pagination": "", "header_color": "#", "header_text_color": "#", "ajax_pagination_infinite_stop": "", "td_column_number": 1, "td_ajax_preloading": "", "td_ajax_filter_type": "", "td_ajax_filter_ids": "", "td_filter_default_txt": "All", "color_preset": "", "border_top": "", "class": "td_block_widget td_uid_2_5dcc051597f61_rand", "el_classes": "", "offset": "", "css": "", "live_filter": "", "live_filter_cur_post_id": "", "live_filter_cur_post_author": "" } \';\nblock_td_uid_2_5dcc051597f61.td_column_number = "1";\nblock_td_uid_2_5dcc051597f61.block_type = "td_block_2";\nblock_td_uid_2_5dcc051597f61.post_count = "1";\nblock_td_uid_2_5dcc051597f61.found_posts = "10";\nblock_td_uid_2_5dcc051597f61.header_color = "#";\nblock_td_uid_2_5dcc051597f61.ajax_pagination_infinite_stop = ""; \nblock_td_uid_2_5dcc051597f61.max_num_pages = "10";\ntdBlocksArray.push(block_td_uid_2_5dcc051597f61);
    </script>
    <div class="td-block-title-wrap">
        <h4 class="block-title">
            <span>
                Most Read
            </span>
        </h4>
    </div>
    <div class="td_block_inner" id="td_uid_2_5dcc051597f61">
        <div class="td-block-span12">
            <div class="td_module_2 td_module_wrap td-animation-stack">
                <div class="td-module-image">
                    <div class="td-module-thumb">
                        <a href="https://gazettereview.com/2019/11/former-bolivian-president-evo-morales-now-mexico/" rel="bookmark" title="Former Bolivian President Evo Morales Is Now In Mexico">
                            
                        </a>
                    </div>
                </div>
            </div>
            <h3 class="entry-title td-module-title">
                <a href="https://gazettereview.com/2019/11/former-bolivian-president-evo-morales-now-mexico/" rel="bookmark" title="Former Bolivian President Evo Morales Is Now In Mexico">
                    Former Bolivian President Evo Morales Is Now In Mexico
                </a>
            </h3>
            <div class="td-module-meta-info">
                \n
                <span class="td-post-date">
                    <time class="entry-date updated td-module-date" datetime="2019-11-12T13:54:51+00:00">
                        Nov 12, 2019
                    </time>

```

```

        </span>
    </div>
    <div class="td-excerpt">
        \nFormer Bolivian President Evo Morales is now in Mexico
after stepping down from power two days ago. The former leader arrived in
Mexico City...
    </div>
</div>
</div>
</div>
</div>
<div class="td_block_wrap td_block_7 td_block_widget td_uid_3_
5dcc0515a52f0_rand td-pb-border-top" data-td-block-uid="td_uid_3_5dcc0515a
52f0">
    <style scoped="">
        .td_uid_3_5dcc0515a52f0_rand .td_module_wrap:hover .entry-ti
tle a,\n
        .td_uid_3_5dcc0515a52f0_rand a.td-pulldown-filter-lin
k:hover,\n
        .td_uid_3_5dcc0515a52f0_rand .td-subcat-item a:hove
r,\n
        .td_uid_3_5dcc0515a52f0_rand .td-subcat-item .td-cur-simpl
e-item,\n
        .td_uid_3_5dcc0515a52f0_rand .td_quote_on_blocks,\n
        .td_uid_3_5dcc0515a52f0_rand .td-opacity-cat .td-post-category:hover,\n
        .td_uid_3_5dcc0515a52f0_rand .td-opacity-read .td-read-more a:hover,\n
        .td_uid_3_5dcc0515a52f0_rand .td-opacity-author .td-post-author-name a:hov
er,\n
        .td_uid_3_5dcc0515a52f0_rand .td-instagram-user a {\n
color: #2b2b2b;\n
        }\n\n
        .td_uid_3_5dcc0515a52f0_rand
.td-next-prev-wrap a:hover,\n
        .td_uid_3_5dcc0515a52f0_rand .td-
load-more-wrap a:hover {\n
background-color: #2b2b2b;\n
border-color: #2b2b2b;\n
        }\n\n
        .td_uid_3_5dcc0515a52
f0_rand .block-title span,\n
        .td_uid_3_5dcc0515a52f0_rand .td-t
rending-now-title,\n
        .td_uid_3_5dcc0515a52f0_rand .block-title
a,\n
        .td_uid_3_5dcc0515a52f0_rand .td-read-more a,\n
        .td_uid_3_5dcc0515a52f0_rand .td-weather-information:before,\n
        .td_uid_3_5dcc0515a52f0_rand .td-weather-week:before,\n
        .td_uid_3_5dcc0515a52f0_rand .td-subcat-dropdown:hover .td-subcat-more,\n
        .td_uid_3_5dcc0515a52f0_rand .td-exchange-header:before,\n
        .td_
uid_3_5dcc0515a52f0_rand .td-post-category:hover {\n
background-color: #2b2b2b;\n
        }\n\n
        .td_uid_3_5dcc0515a52f0
_rand .block-title {\n
border-color: #2b2b2b;\n
        }\n\n
        \n
        .td_uid_3_5dcc0515a52f0_rand .block-title
span,\n
        .td_uid_3_5dcc0515a52f0_rand .td-trending-now-title,\n
        .td_uid_3_5dcc0515a52f0_rand .block-title a {\n
color: #;\n
    }
    </style>
    <script>
        var block_td_uid_3_5dcc0515a52f0 = new tdBlock();\nblock_td_
uid_3_5dcc0515a52f0.id = "td_uid_3_5dcc0515a52f0";\nblock_td_uid_3_5dcc051
5a52f0.attrs = \'{ "limit": "2", "sort": "random_7_day", "post_ids": "", "tag_slu
g": "", "authors_id": "", "installed_post_types": "", "category_id": "", "category_
ids": "1,9,10,11,14,15,18", "custom_title": "EDITOR PICKS", "custom_url": "", "s
how_child_cat": "", "sub_cat_ajax": "", "ajax_pagination": "", "header_color": "#
2b2b2b", "header_text_color": "#", "ajax_pagination_infinite_stop": "", "td_col
umn_number": 1, "td_ajax_preloading": "", "td_ajax_filter_type": "", "td_ajax_fi
lter_ids": "", "td_filter_default_txt": "All", "color_preset": "", "border_to
p": "", "class": "td_block_widget td_uid_3_5dcc0515a52f0_rand", "el_clas
s": "", "offset": "", "css": "", "live_filter": "", "live_filter_cur_post_i
d": "", "live_filter_cur_post_author": "" }';\nblock_td_uid_3_5dcc0515a52f0.t
d_column_number = "1";\nblock_td_uid_3_5dcc0515a52f0.block_type = "td_bloc
k_7";\nblock_td_uid_3_5dcc0515a52f0.post_count = "2";\nblock_td_uid_3_5dcc
0515a52f0.found_posts = "6";\nblock_td_uid_3_5dcc0515a52f0.header_color =
"#2b2b2b";\nblock_td_uid_3_5dcc0515a52f0.ajax_pagination_infinite_stop =
"";\nblock_td_uid_3_5dcc0515a52f0.max_num_pages = "3";\ntdBlocksArray.pus

```

```

h(block_td_uid_3_5dcc0515a52f0);
</script>
<div class="td-block-title-wrap">
  <h4 class="block-title">
    <span>
      EDITOR PICKS
    </span>
  </h4>
</div>
<div class="td_block_inner" id="td_uid_3_5dcc0515a52f0">
  <div class="td-block-span12">
    <div class="td_module_6 td_module_wrap td-animation-stack">
      <div class="td-module-thumb">
        <a href="https://gazettereview.com/2019/11/chile-employee
s-defend-store-looters/" rel="bookmark" title="Chile: Employees Defend Sto
re From Looters">
          
        </a>
      </div>
      <div class="item-details">
        <h3 class="entry-title td-module-title">
          <a href="https://gazettereview.com/2019/11/chile-employe
es-defend-store-looters/" rel="bookmark" title="Chile: Employees Defend St
ore From Looters">
            Chile: Employees Defend Store From Looters
          </a>
        </h3>
        <div class="td-module-meta-info">
          \n
          <span class="td-post-date">
            <time class="entry-date updated td-module-date" datetim
e="2019-11-08T17:42:16+00:00">
              Nov 8, 2019
            </time>
          </span>
        </div>
      </div>
    </div>
  </div>
  <div class="td-block-span12">
    <div class="td_module_6 td_module_wrap td-animation-stack">
      <div class="td-module-thumb">
        <a href="https://gazettereview.com/2019/11/nfl-week-10-re
sults-news/" rel="bookmark" title="NFL Week 10: Results, News & More">
          
        </a>
      </div>
      <div class="item-details">

```

```

<h3 class="entry-title td-module-title">
  <a href="https://gazettereview.com/2019/11/nfl-week-10-r
results-news/" rel="bookmark" title="NFL Week 10: Results, News & Mor
e">
    NFL Week 10: Results, News & More
  </a>
</h3>
<div class="td-module-meta-info">
  \n
  <span class="td-post-date">
    <time class="entry-date updated td-module-date" datetim
e="2019-11-11T17:54:42+00:00">
      Nov 11, 2019
    </time>
  </span>
</div>
</div>
</div>
</div>
</div>
<div class="td-footer-wrapper td-footer-template-3">
  <div class="td-container">
    <div class="td-pb-row">
      <div class="td-pb-span12">
      </div>
    </div>
    <div class="td-pb-row">
      <div class="td-pb-span4">
        <div class="td-footer-info">
          <div class="footer-logo-wrap">
            <a href="https://gazettereview.com/">
              
            </a>
          </div>
        </div>
      </div>
    </div>
  </div>

```

```

<div class="footer-text-wrap">
</div>
<div class="footer-social-wrap td-social-style-2">
</div>
</div>
<aside class="widget widget_text">
  <div class="textwidget">
    The Gazette Review is your daily news source covering everyth
ing from world news to personal finance.We provide the most recent, unbias
ed accounts of the news that matters to you.Contact us: editor@gazetterevi
ew.com
  </div>
</aside>
</div>
<div class="td-pb-span4">
  <div class="td_block_wrap td_block_social_counter td_block_widg
et td_uid_5_5dcc0515a9c84_rand td-pb-border-top">
    <h4 class="block-title">
      <span>
        Connect With Gazette
      </span>
    </h4>
    <div class="td-social-list">
      <div class="td_social_type td-pb-margin-side td_social_facebo
ok">
        <div class="td-social-box">
          <div class="td-sp td-sp-facebook">
            </div>
            <span class="td_social_info">
              2,115
            </span>
            <span class="td_social_info td_social_info_name">
              Fans
            </span>
            <span class="td_social_button">
              <a href="https://www.facebook.com/gazettereview" target="_
blank">
                Like
              </a>
            </span>
            </div>
          </div>
          <div class="td_social_type td-pb-margin-side td_social_google
plus">
            <div class="td-social-box">
              <div class="td-sp td-sp-googleplus">
                </div>
                <span class="td_social_info">
                  79
                </span>
                <span class="td_social_info td_social_info_name">
                  Followers
                </span>
                <span class="td_social_button">
                  <a href="https://plus.google.com/+Gazettereviewnews" targe
t="_blank">
                    Follow
                  </a>
                </span>
                </div>
              </div>
            </div>

```

```

<div class="td_social_type td-pb-margin-side td_social_rss">
  <div class="td-social-box">
    <div class="td-sp td-sp-rss">
    </div>
    <span class="td_social_info">
      380
    </span>
    <span class="td_social_info td_social_info_name">
      Followers
    </span>
    <span class="td_social_button">
      <a href="https://gazettereview.com/feed/" target="_blank">
        Follow
      </a>
    </span>
  </div>
</div>
<div class="td_social_type td-pb-margin-side td_social_twitte
r">
  <div class="td-social-box">
    <div class="td-sp td-sp-twitter">
    </div>
    <span class="td_social_info">
      608
    </span>
    <span class="td_social_info td_social_info_name">
      Followers
    </span>
    <span class="td_social_button">
      <a href="https://twitter.com/GazetteReview" target="_blan
k">
        Follow
      </a>
    </span>
  </div>
</div>
</div>
</div>
</div>
<div class="td-pb-span4">
  <div class="td_block_wrap td_block_popular_categories td_block_
widget td_uid_6_5dcc0515a9eec_rand widget widget_categories td-pb-border-t
op" data-tid-block-uid="td_uid_6_5dcc0515a9eec">
    <h4 class="block-title">
      <span>
        Popular Categories
      </span>
    </h4>
    <ul class="td-pb-padding-side">
      <li>
        <a href="https://gazettereview.com/category/entertainment/">
          Entertainment
          <span class="td-cat-no">
            6151
          </span>
        </a>
      </li>
      <li>
        <a href="https://gazettereview.com/category/technology/">
          Technology
          <span class="td-cat-no">

```



```

        2574
      </span>
    </a>
  </li>
</li>
<li>
  <a href="https://gazettereview.com/category/world/">
    World
    <span class="td-cat-no">
      2049
    </span>
  </a>
</li>
</li>
<li>
  <a href="https://gazettereview.com/category/business/">
    Business
    <span class="td-cat-no">
      858
    </span>
  </a>
</li>
</li>
<li>
  <a href="https://gazettereview.com/category/sports/">
    Sports
    <span class="td-cat-no">
      636
    </span>
  </a>
</li>
</li>
<li>
  <a href="https://gazettereview.com/category/health/">
    Health
    <span class="td-cat-no">
      450
    </span>
  </a>
</li>
</li>
</ul>
</div>
</div>
</div>
</div>
</div>
<div class="td-sub-footer-container">
  <div class="td-container">
    <div class="td-pb-row">
      <div class="td-pb-span7 td-sub-footer-menu">
        <div class="menu-td_demo_footer-container">
          <ul class="td-subfooter-menu" id="menu-td_demo_footer">
            <li class="menu-item menu-item-type-custom menu-item-object-c
ustom menu-item-first td-menu-item td-normal-menu menu-item-8" id="menu-it
em-8">
              <a href="https://gazettereview.com/privacy-policy/">
                Website Policies
              </a>
            </li>
            <li class="menu-item menu-item-type-custom menu-item-object-c
ustom td-menu-item td-normal-menu menu-item-33769" id="menu-item-33769">
              <a href="https://gazettereview.com/copyright-notice/">
                Copyright Notice
              </a>
            </li>

```

74/80

localhost:8888/nbconvert/html/Documents/Mini Project/Mini Project.ipynb?download=false

[illegible]

Note that all the names of the chefs are between `<h2>` and `</h2>` tags and the descriptions are between `<p>` and `</p>` tags. We can get the names of the chefs quite easily, as seen below.

In [73]:

```
# List of chef names
# Note that find_all() returns a bs4 object, rather than a Python List.
# The HTML tags are also part of the object.
chefs = soup.find_all('h2')
print(type(chefs))
print(chefs[0])
```

```
<class 'bs4.element.ResultSet'>
<h2>10. Anthony Bourdain</h2>
```

In [74]:

```
# Clean and strip spaces and numbers from the bs4 element and turn it into a Python list
import string
letters = set(string.ascii_letters)
chef_name = []

# Grab relevant letters/spaces and remove extra HTML tags and spaces
for chef in chefs:
    chef = [letter for letter in str(chef) if letter in letters or letter is ' ']
    chef = ''.join(chef[2:len(chef) - 1])
    chef_name.append(chef)

chef_name
```

Out[74]:

```
['Anthony Bourdain',
 'Paul Bocuse',
 'Alain Ducasse',
 'Emeril Lagasse',
 'Vikas Khanna',
 'Marco Pierre White',
 'Heston Blumenthal',
 'Wolfgang Puck',
 'Jamie Oliver',
 'Gordon Ramsay']
```

Getting the list of chef names is trivial with the `find_all()` function (and a little Python cleaning), but what about the descriptions? This is a little trickier since there may be overlapping uses for the `<p>` and `</p>` tags, so let's try [navigating the BeautifulSoup tree](https://www.crummy.com/software/BeautifulSoup/bs4/doc/#navigating-the-tree) (<https://www.crummy.com/software/BeautifulSoup/bs4/doc/#navigating-the-tree>).

This website is simple in that every chef has a two-paragraph description in the same format. We can use this to our advantage once we know what to look for. Let's say we want to extract just the text from these two paragraphs. How can we do so? With the `.contents` attribute, we can access the children of each tag.

In [75]:

```
descriptions = soup.find_all('p')
del descriptions[-12:]
del descriptions[0]
print("The number of paragraphs is:", len(descriptions))
descriptions[:2]
```

The number of paragraphs is: 20

Out[75]:

```
[<p><br/>\nIt\<2\<80\<x99s hard to believe
that the world renowned chef, writer, and television personality Anthony B
ourdain\<2\<80\<x99s career started out with him washing dishes as a colle
ge dropout. He is now one of the most popular travel and food personalitie
s. Although he is no longer officially a chef, his career spanned several
decades. He was a chef at elite restaurants in New York such as the Supper
Club, Sullivan\<2\<80\<x99s, and One Fifth Avenue.</p>,
<p>Bourdain has written several successful novels about his culinary adve
ntures. His shows are well known by his comedic and often profane commenta
ry. He is also famous for the travel and food series No Reservations. Bour
dain also has a blue belt in Brazilian Jiu Jitsu.</p>]
```

In [76]:

```

# Set up the loop
i = 0
chef_description = [''] * 10
chef_image = []

# Grab description text from paragraphs
for d in descriptions:
    curr_desc = []
    if i % 2 == 0:
        curr_desc = d.contents[2]
        chef_image.append(d.contents[0]['src']) # Get images as well
    else:
        curr_desc = d.contents[0]
    # Append relevant parts to corresponding index
    chef_description[int(i / 2)] = chef_description[int(i / 2)] + ' ' + curr_desc
    i += 1

# Voila! We have combined 2 paragraphs into 1.
chef_description[0]

```

Out[76]:

```

' \nIt\\xe2\\x80\\x99s hard to believe that the world renowned chef, writ
er, and television personality Anthony Bourdain\\xe2\\x80\\x99s career sta
rted out with him washing dishes as a college dropout. He is now one of th
e most popular travel and food personalities. Although he is no longer off
icially a chef, his career spanned several decades. He was a chef at elite
restaurants in New York such as the Supper Club, Sullivan\\xe2\\x80\\x99s,
and One Fifth Avenue. Bourdain has written several successful novels about
his culinary adventures. His shows are well known by his comedic and often
profane commentary. He is also famous for the travel and food series No Re
servations. Bourdain also has a blue belt in Brazilian Jiu Jitsu.'

```

We now have lists with the names, descriptions, and images of the chefs! You can arrange this however you want; `chef_data` below is arranged like a JSON object but you can modify this section to make the data look more like a traditional dataset.

In [77]:

```
chef_data = {}

chef_data['Name'] = chef_name
chef_data['Description'] = chef_description
chef_data['Image'] = chef_image

chef_data['Description'][0]
```

Out[77]:

```
' \\nIt\\xe2\\x80\\x99s hard to believe that the world renowned chef, writ
er, and television personality Anthony Bourdain\\xe2\\x80\\x99s career sta
rted out with him washing dishes as a college dropout. He is now one of th
e most popular travel and food personalities. Although he is no longer off
icially a chef, his career spanned several decades. He was a chef at elite
restaurants in New York such as the Supper Club, Sullivan\\xe2\\x80\\x99s,
and One Fifth Avenue. Bourdain has written several successful novels about
his culinary adventures. His shows are well known by his comedic and often
profane commentary. He is also famous for the travel and food series No Re
servations. Bourdain also has a blue belt in Brazilian Jiu Jitsu.'
```

(Optional) Your Turn: Web-Scraping

Now that you've run through this section of the notebook, feel free to experiment with web-scraping on your own. Choose a site and get some raw data out of it!

Note: If you run into a HTTP error 403 (Forbidden) , this means that the site probably blocks web-scraping scripts. You can get around this by modifying the way you request the URL (see [StackOverflow](https://stackoverflow.com/questions/28396036/python-3-4-urllib-request-error-http-403) (<https://stackoverflow.com/questions/28396036/python-3-4-urllib-request-error-http-403>) for some useful tips) or try another site.

In []:

```
# Start parsing here
```

All Done!

In this notebook, we covered loading a dataset, simple statistics, basic data visualizations, and web-scraping to round out your toolset. These will be immensely helpful as you move forwards in building your skills in data science.

By now, you hopefully feel a little more confident with tackling your final project. It is up to you to find your own data, build your own notebook, and show others what you have achieved. Best of luck!

In []: