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Assignment Title

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1. 实验目的

Figure 1.1: European swallow.

1.1. What is the airspeed velocity of an unladen swallow?

While this question leaves out the crucial element of the geographic origin of the swallow, according to Jonathan Corum, an unladen European[1] swallow maintains a cruising airspeed velocity of **11 metres per second**, or **24 miles an hour**. The velocity of the corresponding African swallows requires further research as kinematic data is severely lacking for these species.

2. 实验过程

2.1. How much wood would a woodchuck chuck if a woodchuck could chuck wood?

2.1.1. Suppose "chuck" implies throwing.

> According to the Associated Press (1988), a New York Fish and Wildlife technician named Richard Thomas calculated the volume of dirt in a typical 25–30 foot (7.6–9.1 m) long woodchuck burrow and had determined that if the woodchuck had moved an equivalent volume of wood, it could move "about **700 pounds (320 kg)** on a good day, with the wind at his back".

2.1.2. Suppose "chuck" implies vomiting.

A woodchuck can ingest 361.92 cm^3 (22.09 cu in) of wood per day. Assuming immediate expulsion on ingestion with a 5% retainment rate, a woodchuck could chuck **343.82 cm^3** of wood per day.

Bonus: suppose there is no woodchuck. Fusce varius orci ac magna dapibus porttitor. In tempor leo a neque bibendum sollicitudin. Nulla pretium fermentum nisi, eget sodales magna facilisis eu. Praesent aliquet nulla ut bibendum lacinia. Donec vel mauris vulputate, commodo ligula ut, egestas orci. Suspendisse commodo odio sed hendrerit lobortis. Donec finibus eros erat, vel ornare enim mattis et.

3. 实验结果

3.1. Identify the author of Equation 3.1 below and briefly describe it in English.

$$P(A|B) = \frac{P(B|A)P(A)}{P(B)} \tag{3.1}$$

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3.2. Try to make sense of some more equations.

$$\begin{aligned}(x+y)^3 &= (x+y)^2(x+y)\\ &= (x^2+2xy+y^2)(x+y)\\ &= (x^3+2x^2y+xy^2)+(x^2y+2xy^2+y^3)\\ &= x^3+3x^2y+3xy^2+y^3\end{aligned} \tag{3.2}$$

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$$A = \begin{bmatrix} A_{11} & A_{21} \\ A_{21} & A_{22} \end{bmatrix} \tag{3.3}$$

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4. 实验结论

4.1. Bullet Point List

- First item in a list
  - First item in a list
    - First item in a list
    - Second item in a list
  - Second item in a list
- Second item in a list

4.2. Numbered List

1. First item in a list
2. Second item in a list
3. Third item in a list

5. Interpreting a Table

Per 50g	**Pork**	**Soy**
Energy	760kJ	538kJ
Protein	7.0g	9.3g
Carbohydrate	0.0g	4.9g
Fat	16.8g	9.1g
Sodium	0.4g	0.4g
Fibre	0.0g	1.4g

Table 5.1: Sausage nutrition.

5.1. The table above shows the nutritional consistencies of two sausage types. Explain their relative differences given what you know about daily adult nutritional recommendations.

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6. Reading a Code Listing

Listing 1: Luftballons Perl Script.

```
#!/usr/bin/perl

use strict;
use warnings;

for (1..99) { print $_." Luftballons\n"; }

# This is a commented line

my $string = "Hello World!";

print $string."\n\n";

$string =~ s/Hello/Goodbye Cruel/;

print $string."\n\n";

finale();

exit;

sub finale { print "Fin.\n"; }
```

6.1. How many luftballons will be output by the Listing 1 above?

Aliquam arcu turpis, ultrices sed luctus ac, vehicula id metus. Morbi eu feugiat velit, et tempus augue. Proin ac mattis tortor. Donec tincidunt, ante rhoncus luctus semper, arcu lorem lobortis justo, nec convallis ante quam quis lectus. Aenean tincidunt sodales massa, et hendrerit tellus mattis ac. Sed non pretium nibh. Donec cursus maximus luctus. Vivamus lobortis eros et massa porta porttitor.

A. Identify the regular expression in Listing 1 and explain how it relates to the anti-war sentiments found in the rest of the script.

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References

[1] M. Xiao and C. Liu, "Semantic relation classification via hierarchical recurrent neural network with attention," in *Proceedings of COLING 2016, the 26th International Conference on Computational Linguistics: Technical Papers*, (Osaka, Japan), pp. 1254–1263, The COLING 2016 Organizing Committee, 2016.

[2] Z. C. Lipton, J. Berkowitz, and C. Elkan, "A critical review of recurrent neural networks for sequence learning," 2015.

[3] T.-Y. Lin, P. Goyal, R. Girshick, K. He, and P. Dollár, "Focal loss for dense object detection," 2017.