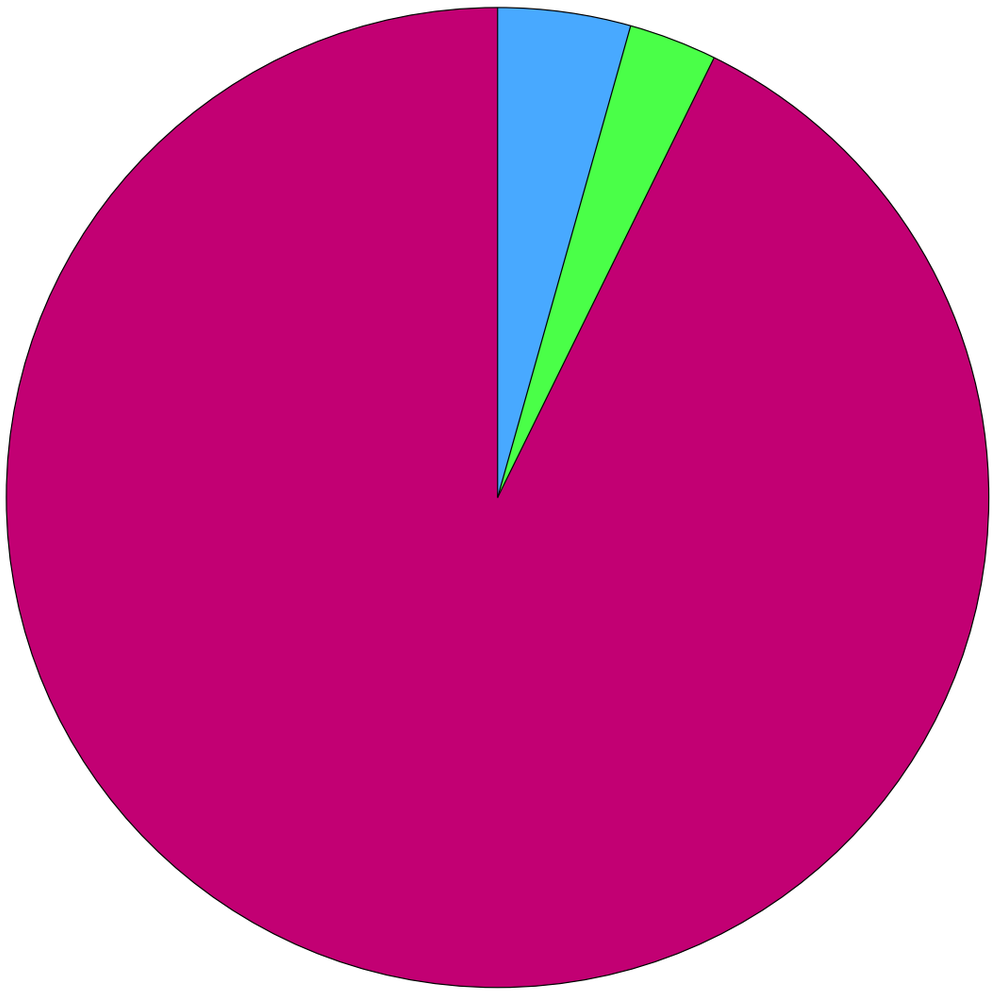

Module 11
TABLES

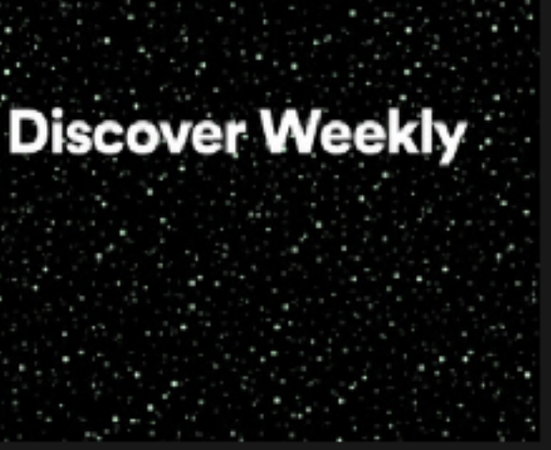
Lecture preparation



Create useful lecture material

Make 3D title text

Draw pie chart



Your weekly mixtape of fresh music. Enjoy new discoveries and deep cuts chosen just for you. Updated every Monday, so save your favourites!

Created by: Spotify • 30 songs, 2 hr 36 min

PAUSE FOLLOWING ••• FOLLOWER 1

Filter Download

	SONG	ARTIST	ALBUM		
+	Ways To Go - Margot Mix	Weval, Margot	Weval Remix	11 hours ago	7:11
+	Death Is A Girl	Mini Mansions	The Great Preten...	11 hours ago	4:36
+	Jumbo	Underworld	Beaucoup Fish	11 hours ago	6:58
+	Bug Powder Dust	The Mysterons	Meandering	11 hours ago	4:27
+	...To Have No Answer	Flock of Dimes	If You See Me, Sa...	11 hours ago	3:49
+	I'll Cut You Down	Uncle Acid & The...	Blood Lust	11 hours ago	5:02
+	L'enfer ce n'est pas les autres c'est moi	The Eye Of Time	Myth I: A Last Da...	11 hours ago	5:46
+	Terrain	pg.lost	Key	11 hours ago	5:29

2:46 3:54

N7 = =VLOOKUP(M7,grades,2)

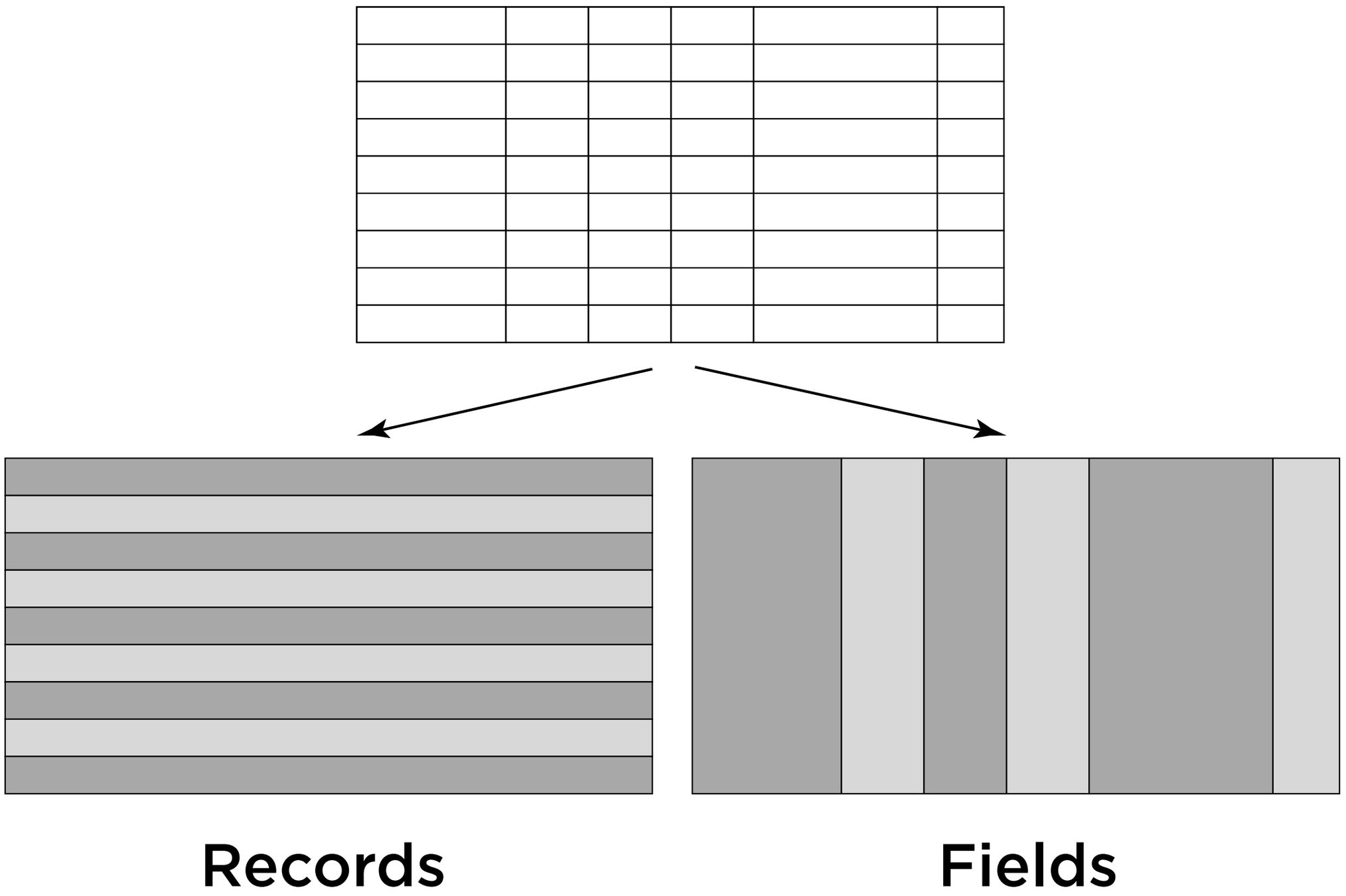
Workbook2

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	0	F												
2	70	D												
3	76	C												
4	86	B												
5	93	A												
6			**Name**	T1	T2	T3	P1	P2	H1	H2	H3	H4	Avg	Grade
7			Ann	89	78	100	88	92	100	95	78	88	90	B
8			Bill	68	87	72	60	80	65	100	50	42	72	D
9			Carol	98	87	100	78	99	80	100	88	95	91	B
10			Doug	78	68	92	88	76	95	99	88	72	82	C
11			Elaine	89	78	100	88	92	100	95	78	88	90	B
12			Frank	79	69	97	95	82	99	93	75	78	85	C
13			Gloria	98	87	100	78	99	80	100	88	95	91	B
14			Howard	78	68	92	88	76	95	99	88	72	82	C
15			Imogene	89	78	100	88	92	100	95	78	88	90	B
16			John	62	78	76	72	60	70	60	78	88	69	F
17			Kesha	79	69	97	95	83	99	93	75	78	86	C
18														
19			T 1-3 = tests 1-3					Tests = 40%						
20			P 1-2 = projects 1-2					Projects = 50 %						
21			H 1-4 = homework 1-4					Homework = 10 %						

www.internet4classrooms.com/excel_grade.htm

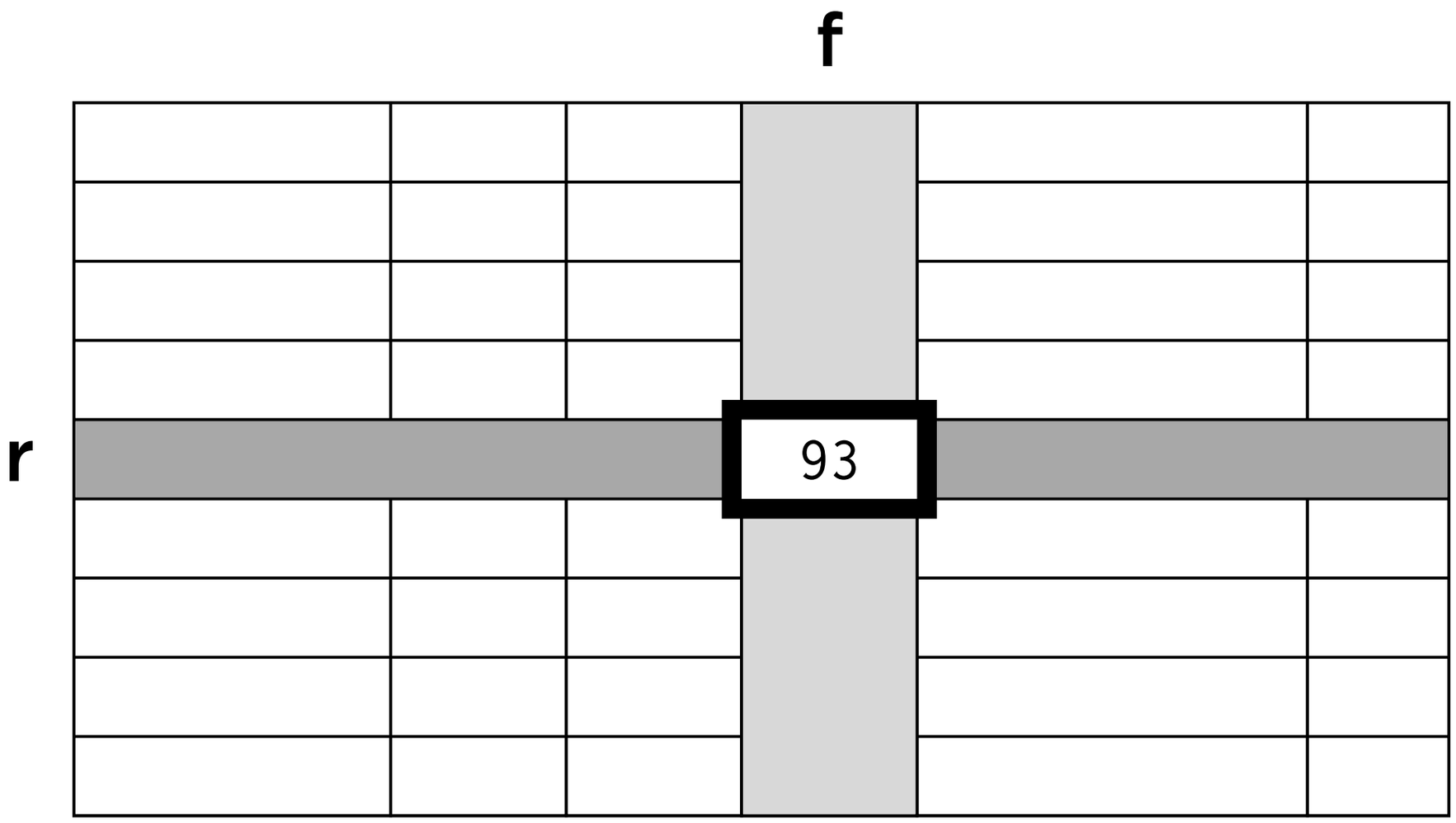
	Hair	Eye	Sex	Freq
1	Black	Brown	Male	32
2	Brown	Brown	Male	53
3	Red	Brown	Male	10
4	Blond	Brown	Male	3
5	Black	Blue	Male	11
6	Brown	Blue	Male	50
7	Red	Blue	Male	10
8	Blond	Blue	Male	30
9	Black	Hazel	Male	10
10	Brown	Hazel	Male	25

A table is a grid. Each row is a *record*, and each column is a *field*. We can think of the table as a **sequence** of records.

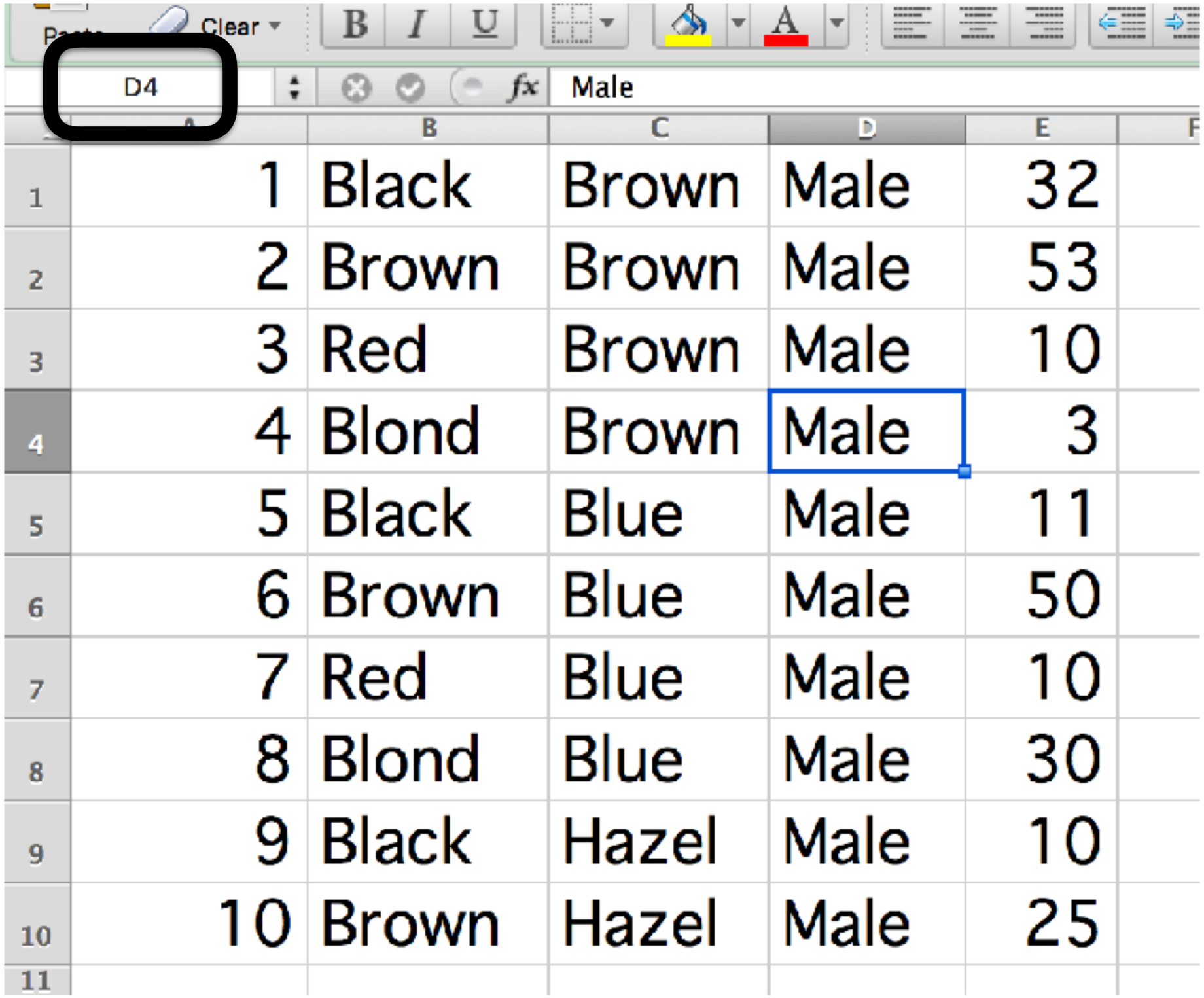


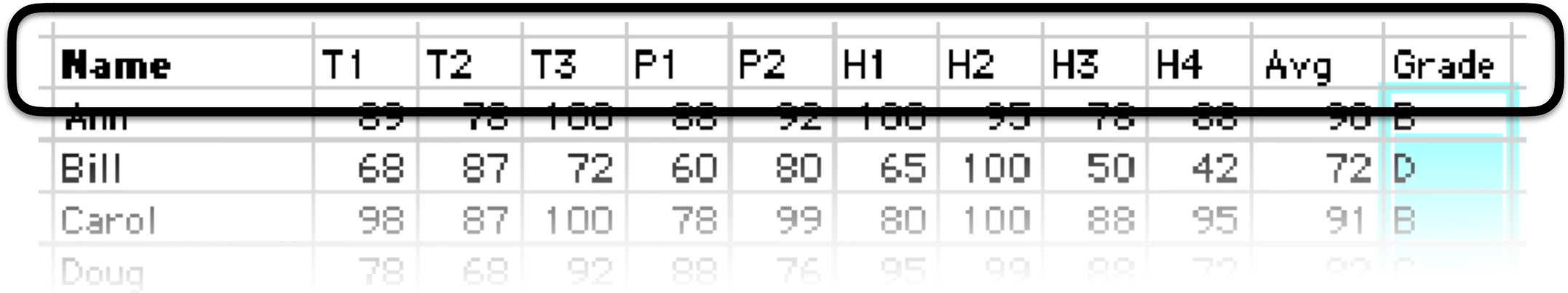
String	int	int	int	String	boolean

All values in a given field have the same type, but different fields can have different types.



A *cell* holds one record's value for one field. A cell's location is "two-dimensional"—it takes two values to describe its location.


Clear
D4
Male
A
B
C
D
E
F
1 1 Black Brown Male 32
2 2 Brown Brown Male 53
3 3 Red Brown Male 10
4 4 Blond Brown Male 3
5 5 Black Blue Male 11
6 6 Brown Blue Male 50
7 7 Red Blue Male 10
8 8 Blond Blue Male 30
9 9 Black Hazel Male 10
10 10 Brown Hazel Male 25
11



Name	T1	T2	T3	P1	P2	H1	H2	H3	H4	Avg	Grade
~~Ann~~	~~89~~	~~78~~	~~100~~	~~88~~	~~92~~	~~100~~	~~95~~	~~78~~	~~88~~	~~90~~	~~B~~
Bill	68	87	72	60	80	65	100	50	42	72	D
Carol	98	87	100	78	99	80	100	88	95	91	B
Doug	78	68	92	88	76	95	99	89	79	83	C

Some tables have “header rows” that give names to the fields.

Representing Tables

Worst idea: one array per field

Name	T1	T2	T3	P1	P2	H1	H2	H3	H4	Avg	Grade
Ann	89	78	100	88	92	100	95	78	88	90	B
Bill	68	87	72	60	80	65	100	50	42	72	D
Carol	98	87	100	78	99	80	100	88	95	91	B
Doug	78	68	92	88	76	95	99	88	72	82	C
Elaine	89	78	100	88	92	100	95	78	88	90	B
Frank	79	69	97	95	82	99	93	75	78	85	C
Gloria	98	87	100	78	99	80	100	88	95	91	B
Howard	78	68	92	88	76	95	99	88	72	82	C
Imogene	89	78	100	88	92	100	95	78	88	90	B
John	62	78	76	72	60	70	60	78	88	69	F
Kesha	79	69	97	95	83	99	93	75	78	86	C

```
String[] Name_field = { "Ann", "Bill", "Carol", … };
int[] T1_field = { 89, 68, 98, 78, … };
int[] T2_field = { 78, 87, 87, 68, … };
int[] P1_field = { 88, 60, 78, 88, … };
…
```

Representing Tables

Slightly better: an array of instances of a `Record` class.

```
class Record
{
   String name;
   int T1;
   int T2;
   int T3;
   ...
}

Record[] grades;
```

Name	T1	T2	T3	P1	P2	H1
Ann	89	78	100	88	92	100
Bill	68	87	72	60	80	65
Carol	98	87	100	78	99	80
Doug	78	68	92	88	76	95
Elaine	89	78	100	88	92	100
Frank	79	69	97	95	82	99
Gloria	98	87	100	78	99	80
Howard	78	68	92	88	76	95
Imogene	89	78	100	88	92	100
John	62	78	76	72	60	70
Kesha	79	69	97	95	83	99

Representing Tables

Best: let someone else do it

Composite
Array
ArrayList
FloatDict
FloatList
HashMap
IntDict
IntList
JSONArray
JSONObject
Object
String
StringDict
StringList
Table
TableRow
XML

keyPressed
keyReleased()
keyTyped()

Files
BufferedReader
createInput()
createReader()
launch()
loadBytes()
loadJSONArray()
loadJSONObject()
loadStrings()
loadTable()
loadXML()
parseJSONArray()
parseJSONObject()
parseXML()

Comma-separated values

CSV: a standard, simple text-based file format for tabular data.

```
"1","Black","Brown","Male",32
"2","Brown","Brown","Male",53
"3","Red","Brown","Male",10
"4","Blond","Brown","Male",3
"5","Black","Blue","Male",11
"6","Brown","Blue","Male",50
"7","Red","Blue","Male",10
"8","Blond","Blue","Male",30
"9","Black","Hazel","Male",10
"10","Brown","Hazel","Male",25
```

1	Black	Brown	Male	32
2	Brown	Brown	Male	53
3	Red	Brown	Male	10
4	Blond	Brown	Male	3
5	Black	Blue	Male	11
6	Brown	Blue	Male	50
7	Red	Blue	Male	10
8	Blond	Blue	Male	30
9	Black	Hazel	Male	10
10	Brown	Hazel	Male	25

```
playerID,birthYear,birthMonth,birthDay,birthCountry,birthState,birthCity,deathYe
aardsda01,1981,12,27,USA,CO,Denver,,,,,,,David,Aardsma,David Allan,215,75,R,R,20
aaronha01,1934,2,5,USA,AL,Mobile,,,,,,,Hank,Aaron,Henry Louis,180,72,R,R,1954-04
aaronto01,1939,8,5,USA,AL,Mobile,1984,8,16,USA,GA,Atlanta,Tommie,Aaron,Tommie Le
aasedo01,1954,9,8,USA,CA,Orange,,,,,,,Don,Aase,Donald William,190,75,R,R,1977-07
abadan01,1972,8,25,USA,FL,Palm Beach,,,,,,,Andy,Abad,Fausto Andres,184,73,L,L,20
abadfe01,1985,12,17,D.R.,La Romana,La Romana,,,,,,,Fernando,Abad,Fernando Antoni
abadijo01,1850,11,4,USA,PA,Philadelphia,1905,5,17,USA,NJ,Pemberton,John,Abadie,J
abbated01,1877,4,15,USA,PA,Latrobe,1957,1,6,USA,FL,Fort Lauderdale,Ed,Abbaticchi
abbeybe01,1869,11,11,USA,VT,Essex,1962,6,11,USA,VT,Colchester,Bert,Abbey,Bert Wo
abbeych01,1866,10,14,USA,NE,Falls City,1926,4,27,USA,CA,San Francisco,Charlie,Ab
abbotda01,1862,3,16,USA,OH,Portage,1930,2,13,USA,MI,Ottawa Lake,Dan,Abbott,Leand
abbotfr01,1874,10,22,USA,OH,Versailles,1935,6,11,USA,CA,Los Angeles,Fred,Abbott,
abbotgl01,1951,2,16,USA,AR,Little Rock,,,,,,,Glenn,Abbott,William Glenn,200,78,R
abbotje01,1972,8,17,USA,GA,Atlanta,,,,,,,Jeff,Abbott,Jeffrey William,190,74,R,L,
abbotji01,1967,9,19,USA,MI,Flint,,,,,,,Jim,Abbott,James Anthony,200,75,L,L,1989-
abbotku01,1969,6,2,USA,OH,Zanesville,,,,,,,Kurt,Abbott,Kurt Thomas,180,71,R,R,19
abbotky01,1968,2,18,USA,MA,Newburyport,,,,,,,Kyle,Abbott,Lawrence Kyle,200,76,L,
abbotod01,1888,9,5,USA,PA,New Eagle,1933,4,13,USA,DC,Washington,Ody,Abbott,Ody C
abbotpa01,1967,9,15,USA,CA,Van Nuys,,,,,,,Paul,Abbott,Paul David,185,75,R,R,1990
aberal01,1927,7,31,USA,OH,Cleveland,1993,5,20,USA,OH,Garfield Heights,Al,Aber,Al
```

seanlahman.com/baseball-archive/statistics/

```
Scoring, Performance = -1, Participation = 1, Min Reply = 0, Min Corre
= 0, ""
Question, , ,"Question 1|MC|16", Score, Final Answer Time, Number of
Attempts, F
irst Response, Time
Start Time, , , 14:36:15, , , , ,
Stop Time, , ,14:37:29, , , , ,
Correct Answer, , ,D, , , , ,
Response A, , ,3,0, , , , ,
Response B, , ,5,0, , , , ,
Response D, , ,2,1, , , , ,
#3209xxxx,"",0,B,0,35.100,1,B,35.100,
#3236xxxx,"",0,B,0,27.117,1,B,27.117,
#3C31xxxx,"",0,B,0,60.433,2,B,52.717,
#3C3Cxxxx,"",0,A,0,58.717,14,B,1.500,
#3C4Dxxxx,"",0,B,0,48.133,2,B,34.800,
#3C52xxxx,"",0,A,0,59.000,1,A,59.000,
#3C79xxxx,"",0,B,0,55.583,1,B,55.583,
#44FCxxxx,"",0,A,0,43.067,2,A,40.817,
#4514xxxx,"",1,D,1,38.517,4,B,4.067,
#46E6xxxx,"",1,D,1,68.983,11,E,20.833,
```

```
Table my_table = loadTable( "filename.csv" );
```

Read CSV data from a file, create a new `Table` instance to store it.

```
Table my_table = loadTable( "filename.csv" );
```

Read CSV data from a file, create a new `Table` instance to store it.

```
Table my_table = loadTable(
  “filename.csv”, “tsv” );
```

Same, but use tab-separated values.

```
Table my_table = loadTable( "filename.csv" );
```

Read CSV data from a file, create a new `Table` instance to store it.

```
Table my_table = loadTable(
  “filename.csv”, “tsv” );
```

Same, but use tab-separated values.

```
Table my_table = loadTable(
  “filename.csv”, “header” );
```

Treat the first row as a header row.

```
Table my_table = loadTable( "filename.csv" );
```

Read CSV data from a file, create a new `Table` instance to store it.

```
Table my_table = loadTable(
  “filename.csv”, “tsv” );
```

Same, but use tab-separated values.

```
Table my_table = loadTable(
  “filename.csv”, “header” );
```

Treat the first row as a header row.

```
Table my_table = loadTable(
  “filename.csv”, “header, tsv” );
```

Both options.

```
Table my_table = loadTable( "filename.csv" );
```

Read CSV data from a file, create a new `Table` instance to store it.

```
Table my_table = loadTable(
  “filename.csv”, “tsv” );
```

Same, but use tab-separated values.

```
Table my_table = loadTable(
  “filename.csv”, “header” );
```

Treat the first row as a header row.

```
Table my_table = loadTable(
  “filename.csv”, “header, tsv” );
```

Both options.

Reading cells

To read a cell value, you need to know **three** things about it:

1. The record: what **row** is the cell in?
2. The field: what **column** is the cell in?
3. What **type** of data do you expect to find there?

1	Black	Brown	Male	32
2	Brown	Brown	Male	53
3	Red	Brown	Male	10
4	Blond	Brown	Male	3
5	Black	Blue	Male	11
6	Brown	Blue	Male	50
7	Red	Blue	Male	10
8	Blond	Blue	Male	30
9	Black	Hazel	Male	10
10	Brown	Hazel	Male	25

Row					
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
2	3	Red	Brown	Male	10
3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

Column

Row	0	1	2	3	4
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
2	3	Red	Brown	Male	10
3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

Column

Row	0	1	2	3	4
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
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3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

```
String eyes = table.getString( 4, 2 );
```

Column

Row	0	1	2	3	4
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
2	3	Red	Brown	Male	10
3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

```
String eyes = table.getString( 4, 2 );
```

Column

Row	0	1	2	3	4
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
2	3	Red	Brown	Male	10
3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

```
String eyes = table.getString( 4, 2 );
```

Column

Row	0	1	2	3	4
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
2	3	Red	Brown	Male	10
3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

```
String eyes = table.getString( 4, 2 );
```

Column

Row	0	1	2	3	4
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
2	3	Red	Brown	Male	10
3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

```
int freq = table.getInt( 6, 4 );
```

```
"","Hair","Eye","Sex","Freq"
"1","Black","Brown","Male",32
"2","Brown","Brown","Male",53
"3","Red","Brown","Male",10
"4","Blond","Brown","Male",3
"5","Black","Blue","Male",11
"6","Brown","Blue","Male",50
"7","Red","Blue","Male",10
"8","Blond","Blue","Male",30
"9","Black","Hazel","Male",10
"10","Brown","Hazel","Male",25
```

Column

Row	0	1	2	3	4
		Hair	Eye	Sex	Freq
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
2	3	Red	Brown	Male	10
3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

Column

	0	1	2	3	4
		Hair	Eye	Sex	Freq
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
2	3	Red	Brown	Male	10
3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

Row

```
String eyes = table.getString( 4, 2 );
```

Column

Row	0	1	2	3	4
		Hair	Eye	Sex	Freq
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
2	3	Red	Brown	Male	10
3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

```
String eyes = table.getString( 4, "Eye" );
```

Column

	0	1	2	3	4
		Hair	Eye	Sex	Freq
0	1	Black	Brown	Male	32
1	2	Brown	Brown	Male	53
2	3	Red	Brown	Male	10
3	4	Blond	Brown	Male	3
4	5	Black	Blue	Male	11
5	6	Brown	Blue	Male	50
6	7	Red	Blue	Male	10
7	8	Blond	Blue	Male	30
8	9	Black	Hazel	Male	10
9	10	Brown	Hazel	Male	25

Row

```
String eyes = table.getString( 4, "Eye" );
```

```
int some_int = table.getInt( 5, 3 );
int some_int = table.getInt( 5, "field name" );

float some_float = table.getFloat( 5, 3 );
float some_float = table.getFloat( 5, "field name" );

String some_string = table.getString( 5, 3 );
String some_string = table.getString( 5, "field name" );
```

Modifying cells

```
table.setInt( 5, 3, 8735 );
table.setInt( 5, "field name", 8735 );

table.setFloat( 5, 3, 3.1415 );
table.setFloat( 5, "field name", 3.1415 );

table.setString( 5, 3, "Hallux" );
table.setString( 5, "field name", "Hallux" );
```

Table characteristics

```
int num_rows = table.getRowCount();
int num_cols = table.getColumnCount();
```

Table characteristics

```
int num_rows = table.getRowCount();
int num_cols = table.getColumnCount();
```

Name	T1	T2	T3	P1	P2	H1	H2	H3	H4	Avg	Grade
Ann	89	78	100	88	92	100	95	78	88	90	B
Bill	68	87	72	60	80	65	100	50	42	72	D
Carol	98	87	100	78	99	80	100	88	95	91	B
Doug	78	68	92	88	76	95	99	88	72	82	C
Elaine	89	78	100	88	92	100	95	78	88	90	B
Frank	79	69	97	95	82	99	93	75	78	85	C
Gloria	98	87	100	78	99	80	100	88	95	91	B
Howard	78	68	92	88	76	95	99	88	72	82	C
Imogene	89	78	100	88	92	100	95	78	88	90	B
John	62	78	76	72	60	70	60	78	88	69	F
Kesha	79	69	97	95	83	99	93	75	78	86	C

Table characteristics

```
int num_rows = table.getRowCount();
int num_cols = table.getColumnCount();
```

```
float total = 0;

for( int idx = 0; idx < table.getRowCount(); ++idx ) {
  total += table.getInt( idx, "P1" );
}

float p1_average = total / table.getRowCount();
```

Search

Music | Library | For You | Browse | Radio | Store

Library
- Recently Added
- Artists
- Albums
- Songs
- Genres
- Videos

Music Playlists
- Purchased on Hogwall...
- Genius
- Movie Trailers
- Purchased
- 90's Music
- Classical Music
- Music Videos
- My Top Rated
- Recently Added
- Recently Played
- Top 25 Most Played
- Alarm
- Awesome
- cc
- Good KEXP songs
- Internet Songs
- master
- OMOM
- pflh

Name	Time	Artist	Album	Genre	Plays	Last Played	Date Added
Reflektor	7:34	Arcade Fire	Reflektor	Alternative	4	2016-06-18, 5:1...	2014-04
We Exist	5:44	Arcade Fire	Reflektor	Alternative	2	2014-04-24, 5:5...	2014-04
Flashbulb Eyes	2:42	Arcade Fire	Reflektor	Alternative	2	2014-04-24, 6:0...	2014-04
Here Comes The Night Time	6:31	Arcade Fire	Reflektor	Alternative	2	2014-04-24, 6:0...	2014-04
Normal Person	4:22	Arcade Fire	Reflektor	Alternative	20	2015-12-16, 2:3...	2014-04
You Already Know	3:59	Arcade Fire	Reflektor	Alternative	7	2015-06-11, 11:...	2014-04
Joan Of Arc	5:24	Arcade Fire	Reflektor	Alternative	7	2015-06-11, 11:...	2014-04
Digital Booklet - 2013		Arcade Fire	Reflektor	Alternative			2014-04
Here Comes The Night Time II	2:52	Arcade Fire	Reflektor	Alternative	5	2015-06-11, 11:...	2014-04
Awful Sound (Oh Eurydice)	6:14	Arcade Fire	Reflektor	Alternative	3	2015-06-11, 11:...	2014-04
It's Never Over (Oh Orpheus)	6:43	Arcade Fire	Reflektor	Alternative	4	2016-03-31, 6:4...	2014-04
Porno	6:03	Arcade Fire	Reflektor	Alternative	4	2016-03-31, 6:3...	2014-04
Afterlife	5:53	Arcade Fire	Reflektor	Alternative	2	2015-06-12, 12:...	2014-04
Supersymmetry	11:17	Arcade Fire	Reflektor	Alternative	2	2015-06-12, 12:...	2014-04
Election Day	5:28	Arcadia	So Red the Rose	Rock	5	2016-05-12, 10:...	2005-10
O'reilly On Advertising Theme	3:02	Ari Posner & Ian L...	The Age of Persua...	Jazz	4	2014-04-27, 9:3...	2009-12
The Age of Persuasion Theme -...	3:17	Ari Posner & Ian L...	The Age of Persua...	Jazz	2	2013-08-26, 10:...	2009-12
The Age of Persuasion Theme -...	3:13	Ari Posner & Ian L...	The Age of Persua...	Jazz	1	2013-08-26, 10:...	2009-12
The Age of Persuasion Theme -...	3:19	Ari Posner & Ian L...	The Age of Persua...	Jazz	1	2013-08-26, 10:...	2009-12
Before Your Very Eyes...	5:48	Atoms for Peace	Amok	Electronic	7	2013-08-26, 10:...	2013-03
Default	5:16	Atoms for Peace	Amok	Electronic	31	2014-08-16, 3:4...	2013-03
Ingenue	4:30	Atoms for Peace	Amok	Electronic	6	2013-08-29, 8:5...	2013-03
Dropped	4:57	Atoms for Peace	Amok	Electronic	5	2013-07-08, 2:4...	2013-03
Unless	4:40	Atoms for Peace	Amok	Electronic	5	2013-07-08, 2:4...	2013-03
Stuck Together Pieces	5:28	Atoms for Peace	Amok	Electronic	6	2014-01-31, 8:0...	2013-03
Judge Jury and Executioner	3:28	Atoms for Peace	Amok	Electronic	5	2013-07-08, 2:5...	2013-03
Reverse Running	5:06	Atoms for Peace	Amok	Electronic	5	2013-08-28, 2:1...	2013-03
Amok	5:25	Atoms for Peace	Amok	Electronic	5	2013-07-08, 3:0...	2013-03
Orphans							
Gamma Ray							
Chemtrails							
Modern Guilt							
Youthless							

Sorting by column

Music | Library | For You | Browse | Radio | Store | Search

Library
- Recently Added
- Artists
- Albums
- Songs
- Genres
- Videos

Music Playlists
- Purchased on Hogwall...
- Genius
- Movie Trailers
- Purchased
- 90's Music
- Classical Music
- Music Videos
- My Top Rated
- Recently Added
- Recently Played
- Top 25 Most Played
- Alarm
- Awesome
- cc
- Good KEXP songs
- Internet Songs
- master
- OMOM
- pflh

Name	Time	Artist	Album	Genre	Plays	Last Played	Date Added
One Minute of Music -- April 20...	1:06	Doctor Thingo	One Minute of Mu...		120	2013-11-08, 3:1...	2008-05
DVNO	3:56	Justice	Justice	Electronic	81	2014-08-16, 4:1...	2008-07
A New Town	4:01	Field Music	Plumb	Alternative	63	2014-08-16, 3:3...	2012-03
Everything Up (Zizou)	5:19	Zero 7	Everything Up (Ziz...	Electronic	59	2014-08-16, 4:3...	2009-09
One Minute of Music -- June 20...	1:51	Doctor Thingo	One Minute of Mu...	Experimen...	55	2013-11-08, 3:1...	2008-07
One Minute of Music -- May 20...	1:42	Doctor Thingo	One Minute of Mu...	Blues	52	2013-11-08, 3:1...	2008-06
Dig Gravedigger Dig	4:12	Corb Lund	Cabin Fever (Delu...	Country	48	2015-12-16, 2:4...	2012-10
D.A.N.C.E. •••	4:02	Justice	Justice	Electronic	48	2013-08-29, 8:0...	2008-07
The Safety Dance	2:45	Men Without Hats	The Silver Collecti...	Pop	47	2014-08-17, 6:2...	2010-04
A Christmas Carol (Part 1)	48:10	Patrick Stewart	A Christmas Carol...	Other	47	2013-09-26, 4:3...	2009-12
Default	3:07	Django Django	Django Django	Electronic	46	2014-08-16, 3:5...	2013-03
The Way We Get By	2:40	Spoon	Kill the Moonlight	Alternative	46	2016-04-02, 7:4...	2012-05
Burning Down the House	3:39	The Cardigans & T...	Best of the Cardig...	Pop	44	2014-08-16, 4:4...	2010-05
Over and Over	5:48	Hot Chip	The Warning	Electronic	44	2014-08-16, 4:0...	2012-05
The Bones of You	4:49	Elbow	The Seldom Seen...	Alternative	41	2013-11-08, 3:5...	2011-05
Grounds for Divorce	3:39	Elbow	The Seldom Seen...	Alternative	41	2013-11-08, 4:0...	2011-05
Retrograde	3:44	James Blake	Overgrown (Delux...	Electronic	41	2014-08-16, 4:2...	2013-11
Three Ways to Vacuum Your Ho...	3:25	Madrigaia	Pleiades	World Fusi...	41	2013-11-08, 4:1...	2008-08
The Birds	8:03	Elbow	Build a Rocket Boys!	Alternative	39	2013-11-08, 3:3...	2011-05
How Low	2:40	José González	In Our Nature	Pop	38	2016-03-31, 6:2...	2011-02
Eight Pieces for the Left Hand	38:53	J. Robert Lennon	Selected Shorts		37	2013-06-26, 5:4...	2008-06
Killing for Love	3:03	José González	In Our Nature	Pop	37	2014-02-03, 10:...	2011-02
Where Have All the Good Peopl...	4:22	Sam Roberts		Rock	37	2014-08-16, 3:3...	2013-01
Mirrorball	5:50	Elbow	The Seldom Seen...	Alternative	36	2013-11-08, 4:0...	2011-05
Hands	5:41	Four Tet	Rounds	Electronic	36	2014-03-15, 11:...	2011-05
Things Can Only Get Better	3:56	Howard Jones	Best of Howard Jo...	Pop	36	2014-08-16, 3:3...	2005-10
Down the Line (Vocal)	3:11	José González	In Our Nature	Pop	36	2014-02-03, 9:1...	2011-02
Lippy Kids	6:06	Elbow	Build a Rocket Boys!	Alternative	35	2013-11-08, 3:4...	2011-05
Storm Before the Calm							
Harder Better Faster Stronge							
In Our Nature							
Get Lucky (feat. Pharrell Willi							
Offspring Are Blank							

Sorting by column

Sorting by column

```
table.sort( 4 );
table.sort( "Eyes" );

table.sortReverse( 4 );
table.sortReverse( "Eyes" );
```

Make sure to tell the table that the column contains numbers!

```
table.setColumnType( "SomeColumn", Table.INT );
table.setColumnType( "Other", Table.FLOAT );
```

Baseball salaries

Salaries.csv

```
yearID,teamID,lgID,playerID,salary
1985,ATL,NL,barkele01,870000
1985,ATL,NL,bedrost01,550000
1985,ATL,NL,benedbr01,545000
1985,ATL,NL,campri01,633333
1985,ATL,NL,ceronri01,625000
1985,ATL,NL,chambch01,800000
1985,ATL,NL,dedmoje01,150000
1985,ATL,NL,forstte01,483333
...
```

seanlahman.com/baseball-archive/statistics/

Baseball salaries

Salaries.csv

```
yearID,teamID,lgID,playerID,salary
1985,ATL,NL,barkele01,870000
1985,ATL,NL,bedrost01,550000
1985,ATL,NL,benedbr01,545000
1985,ATL,NL,campri01,633333
1985,ATL,NL,ceronri01,625000
1985,ATL,NL,chambch01,800000
1985,ATL,NL,dedmoje01,150000
1985,ATL,NL,forstte01,483333
…
```

Master.csv

```
playerID,birthYear,birthMonth,birthDay,birthCountry,birthState,birthCity,deathYear
aardsda01,1981,12,27,USA,CO,Denver,,,,,,,David,Aardsma,David Allan,215,75,R,R,2004
…
benedbr01,1955,8,18,USA,AL,Birmingham,,,,,,,Bruce,Benedict,Bruce Edwin,175,73,R,R,
…
```

seanlahman.com/baseball-archive/statistics/

Regional food inspections

Facilities_OpenData.csv

```
“FACILITYID","BUSINESS_NAME","TELEPHONE","ADDR","CITY","EATSMART","OPEN_DATE","DESC
"B5AB474B-2CBC-4D61-B100-670BB6EE6AD7","YE'S SUSHI","519-888-6066","B8 - 583 KING S
"CCA5C401-01EF-42AE-832C-7AB24C201263","KISMET RESTAURANT","(519) 746-8788","20 - 1
…
```

Inspections_OpenData.csv

```
"INSPECTION_ID","FACILITYID","INSPECTION_DATE","REQUIRE_REINSPECTION","CERTIFIED_FO
"{56D1AB86-5392-452E-8336-000964689795}","081F0F8A-892E-41F7-811C-9CEE8D690A14","20
"{67DF7158-C081-412B-B6DC-000C251E98F6}","23AA5EBA-35C8-47FB-8C95-198C50C72B92","20
"{C449B882-89A0-4F47-B05A-000C326432A1}","F1CFD836-8A73-4A03-85E0-1EE669470E26","20
…
```

Infractions_OpenData.csv

```
"INFRACTION_ID","INSPECTION_ID","INFRACTION_TYPE","Infraction","Result","Comment",
"{187D230D-954E-426E-AD29-2622155F4C16}","{C45B2081-E864-43CB-A569-0021567F3327}",
"{5D5A9FDC-019D-4275-A6E0-6C4E97DD136A}","{C45B2081-E864-43CB-A569-0021567F3327}",
…
```

www.regionofwaterloo.ca/en/regionalGovernment/FoodPremiseDataset.asp

Regional food inspections

1. Get restaurant name from user.
2. Look up corresponding `FACILITYID` in Facilities_OpenData.csv.
3. In Inspections_OpenData.csv, find all `INSPECTION_ID`s that have the same `FACILITYID`.
4. In Infractions_OpenData.csv, find all `INFRACTION_ID`s associated with any of these `INSPECTION_ID`s.
5. Report the text of the infractions.

www.regionofwaterloo.ca/en/regionalGovernment/FoodPremiseDataset.asp