# Sociedade da Informação e do Conhecimento

## Aula 4

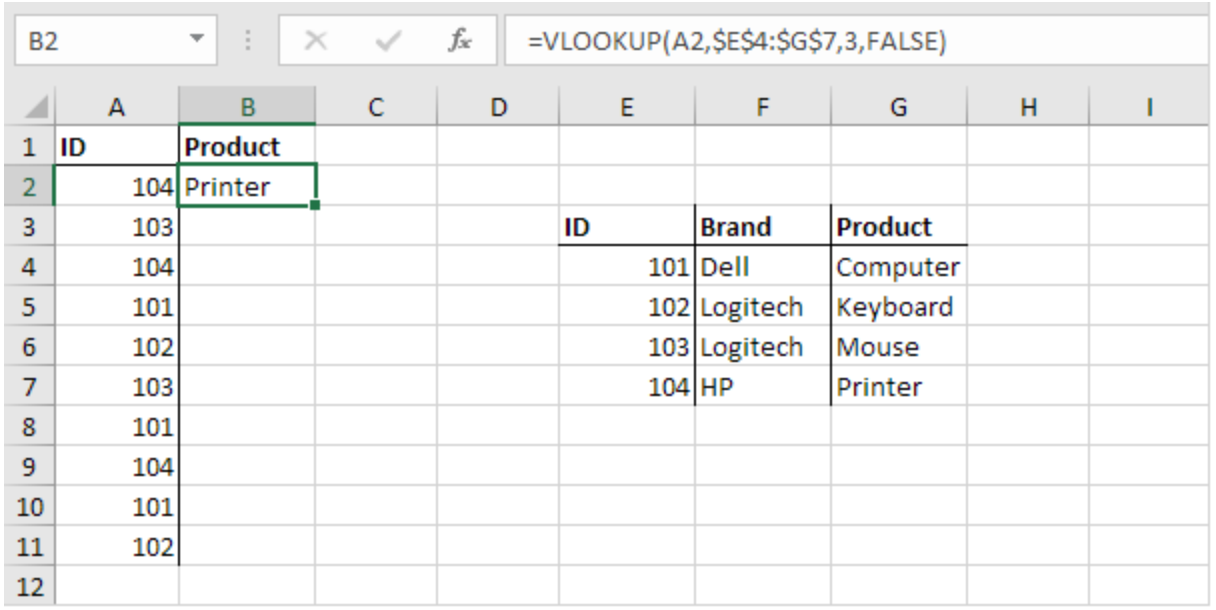
Tutorial Excel

DCT DEPARTAMENTO CIÊNCIA E TECNOLOGIA

UPT UNIVERSIDADE PORTUCALENSE

## Vlookup

The VLOOKUP (Vertical lookup) function looks for a value in the leftmost column of a table, and then returns a value in the same row from another column you specify.



B2 =VLOOKUP(A2,$E$4:$G$7,3,FALSE)

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ID | Product | | | | | | | |
| 2 | 104 | Printer | | | | | | | |
| 3 | 103 | | | | ID | Brand | Product | | |
| 4 | 104 | | | | 101 | Dell | Computer | | |
| 5 | 101 | | | | 102 | Logitech | Keyboard | | |
| 6 | 102 | | | | 103 | Logitech | Mouse | | |
| 7 | 103 | | | | 104 | HP | Printer | | |
| 8 | 101 | | | | | | | | |
| 9 | 104 | | | | | | | | |
| 10 | 101 | | | | | | | | |
| 11 | 102 | | | | | | | | |
| 12 | | | | | | | | | |

VLOOKUP function looks for the ID (104) in the leftmost column of the range $E$4:$G$7 and returns the value in the same row from the third column (third argument is set to 3). The fourth argument is set to FALSE to return an exact match or a #N/A error if not found.

# Lookup & Reference Functions

## Hlookup

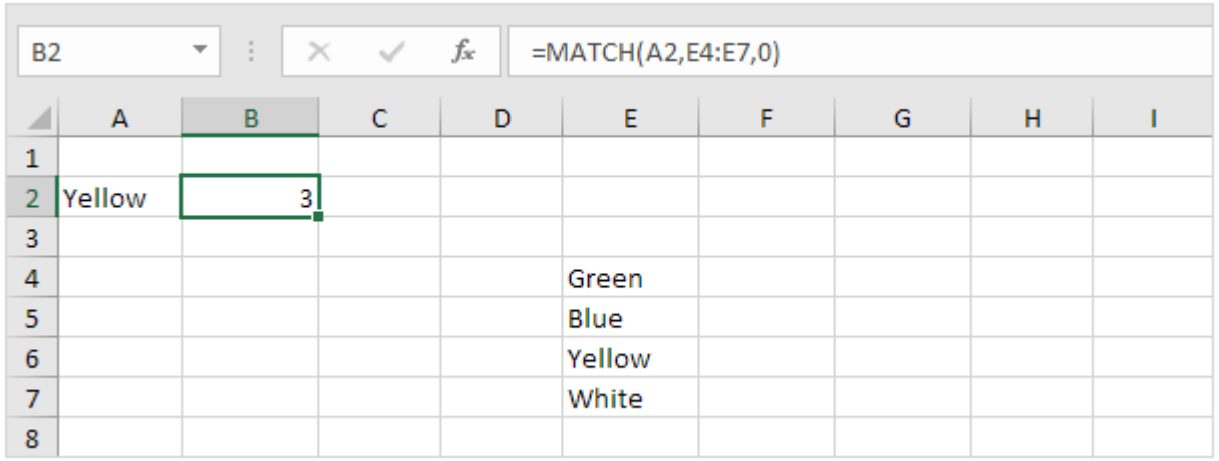
In a similar way, you can use the HLOOKUP (Horizontal lookup) function.

B2 =HLOOKUP(A2,$E$4:$H$6,3,FALSE)

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | **ID** | **Product** | | | | | | | |
| 2 | 104 | Printer | | | | | | | |
| 3 | 103 | Mouse | | | | | | | |
| 4 | 104 | Printer | | **ID** | 101 | 102 | 103 | 104 | |
| 5 | 101 | Computer | | **Brand** | Dell | Logitech | Logitech | HP | |
| 6 | 102 | Keyboard | | **Product** | Computer | Keyboard | Mouse | Printer | |
| 7 | 103 | Mouse | | | | | | | |
| 8 | 101 | Computer | | | | | | | |
| 9 | 104 | Printer | | | | | | | |
| 10 | 101 | Computer | | | | | | | |
| 11 | 102 | Keyboard | | | | | | | |
| 12 | | | | | | | | | |

## Match

The MATCH function returns the position of a value in a given range.

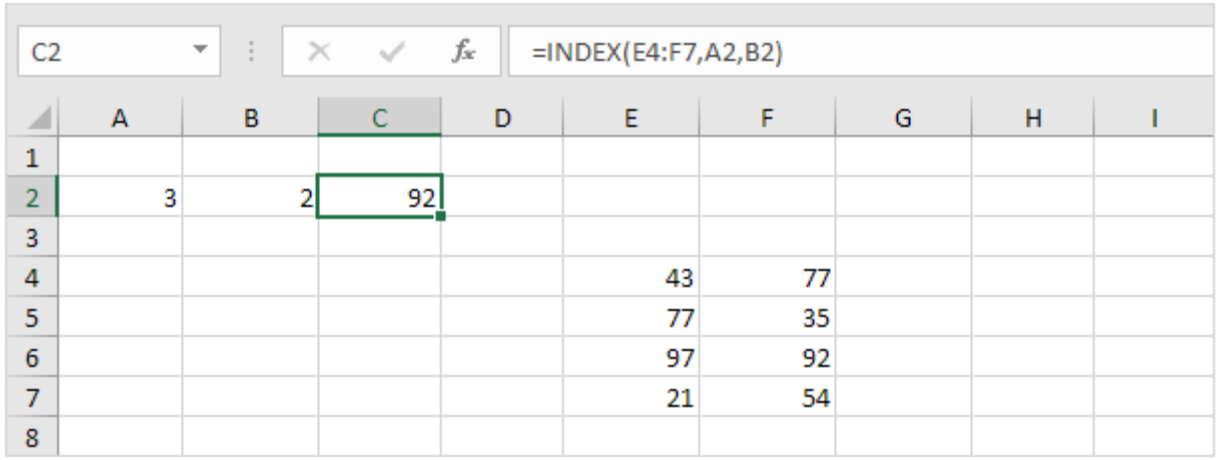



Yellow found at position 3 in the range E4:E7. The third argument is optional. Set this argument to 0 to return the position of the value that is exactly equal to lookup_value (A2) or a #N/A error if not found.

# Lookup & Reference Functions

## Index

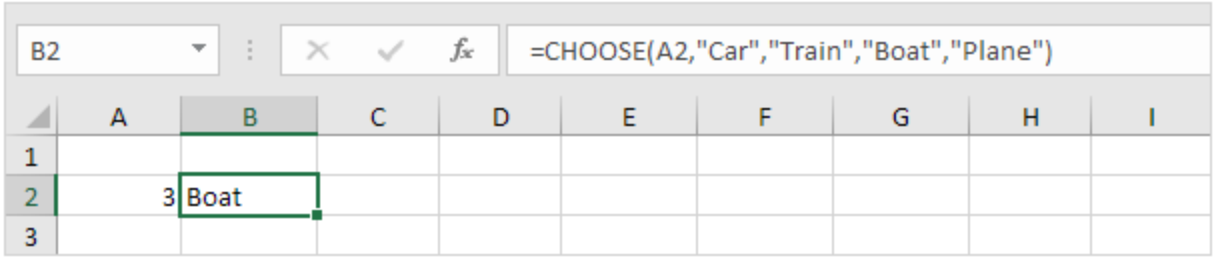
The INDEX function below returns a specific value in a two-dimensional range.




92 found at the intersection of row 3
and column 2 in the range E4:F7.

## Choose

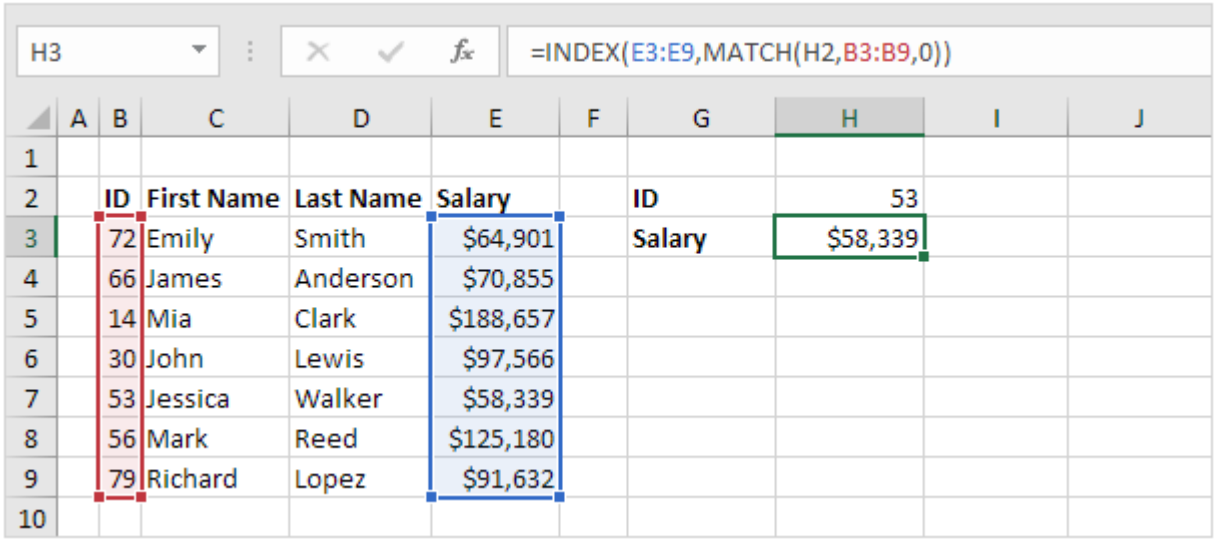
The CHOOSE function returns a value from a list of values, based on a position number.




Boat found at position 3.

## Index and Match

Replace the value 5 in the INDEX function (see previous example) with the MATCH function (see first example) to lookup the salary of ID 53.




| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | |
| 2 | | ID | First Name | Last Name | Salary | | ID | 53 | | |
| 3 | | 72 | Emily | Smith | $64,901 | | Salary | $58,339 | | |
| 4 | | 66 | James | Anderson | $70,855 | | | | | |
| 5 | | 14 | Mia | Clark | $188,657 | | | | | |
| 6 | | 30 | John | Lewis | $97,566 | | | | | |
| 7 | | 53 | Jessica | Walker | $58,339 | | | | | |
| 8 | | 56 | Mark | Reed | $125,180 | | | | | |
| 9 | | 79 | Richard | Lopez | $91,632 | | | | | |
| 10 | | | | | | | | | | |

The MATCH function returns position 5. The INDEX function needs position 5. It's a perfect combination. If you like, you can also use the VLOOKUP function.

## Two-way Lookup

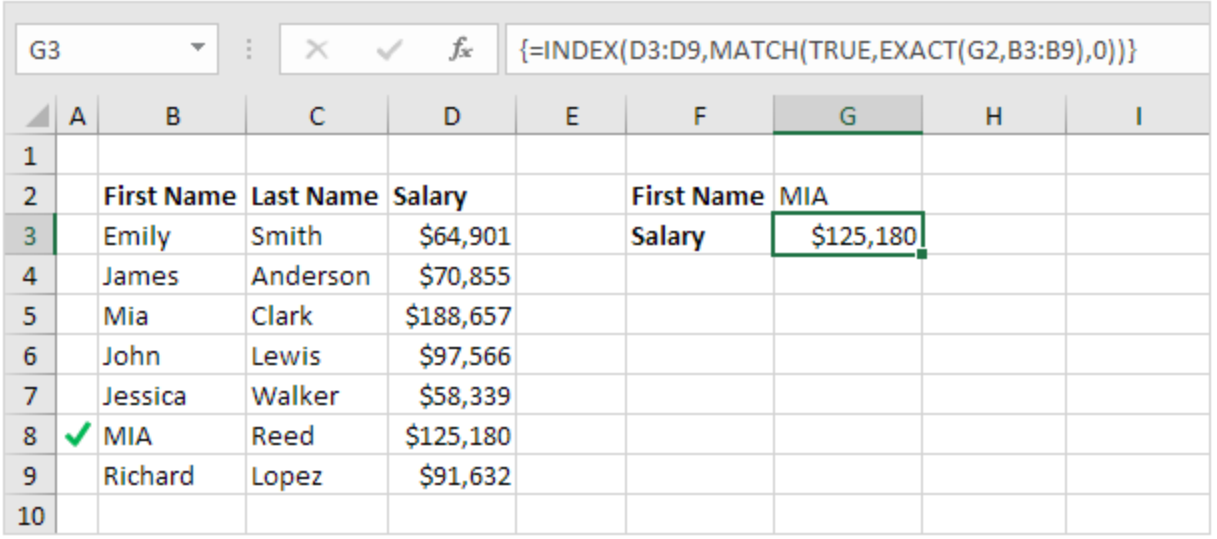
The INDEX function can also return a specific value in a two-dimensional range.

G5 =INDEX(B2:D13,MATCH(G2,A2:A13,0),MATCH(G3,B1:D1,0))

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | Chocolate | Strawberry | Vanilla | | | | | |
| 2 | Jan | 544 | 639 | 189 | | Month | Feb | | |
| 3 | Feb | 217 | 719 | 679 | | Flavour | Chocolate | | |
| 4 | Mar | 810 | 178 | 810 | | | | | |
| 5 | Apr | 567 | 926 | 929 | | Sales | 217 | | |
| 6 | May | 745 | 230 | 364 | | | | | |
| 7 | Jun | 298 | 820 | 947 | | | | | |
| 8 | Jul | 457 | 522 | 832 | | | | | |
| 9 | Aug | 495 | 500 | 239 | | | | | |
| 10 | Sep | 871 | 391 | 529 | | | | | |
| 11 | Oct | 585 | 225 | 791 | | | | | |
| 12 | Nov | 478 | 262 | 540 | | | | | |
| 13 | Dec | 741 | 883 | 809 | | | | | |
| 14 | | | | | | | | | |

## Case-sensitive Lookup

By default, the VLOOKUP function performs a case-insensitive lookup. However, you can use the INDEX, MATCH and the EXACT function in Excel to perform a case-sensitive lookup.



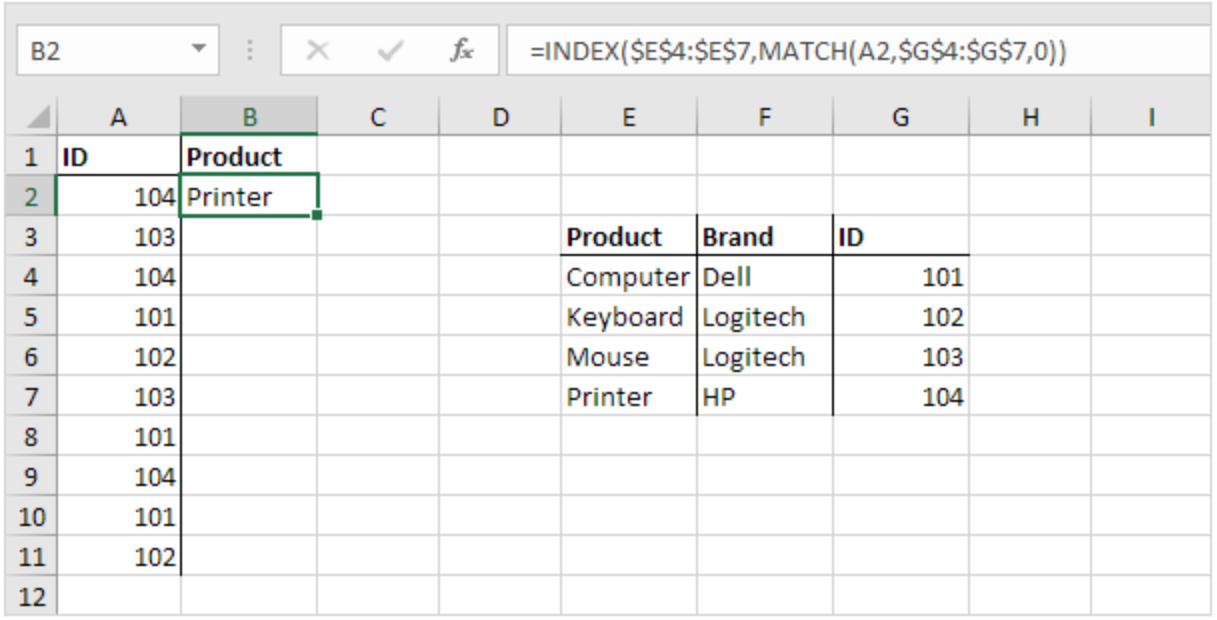
G3 | {=INDEX(D3:D9,MATCH(TRUE,EXACT(G2,B3:B9),0))}

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | First Name | Last Name | Salary | | First Name | MIA | | |
| 3 | | Emily | Smith | $64,901 | | Salary | $125,180 | | |
| 4 | | James | Anderson | $70,855 | | | | | |
| 5 | | Mia | Clark | $188,657 | | | | | |
| 6 | | John | Lewis | $97,566 | | | | | |
| 7 | | Jessica | Walker | $58,339 | | | | | |
| 8 | ✓ | MIA | Reed | $125,180 | | | | | |
| 9 | | Richard | Lopez | $91,632 | | | | | |
| 10 | | | | | | | | | |

# Lookup & Reference Functions

## Left Lookup

The VLOOKUP function only looks to the right. No worries, you can use the INDEX and the MATCH function in Excel to perform a left lookup.



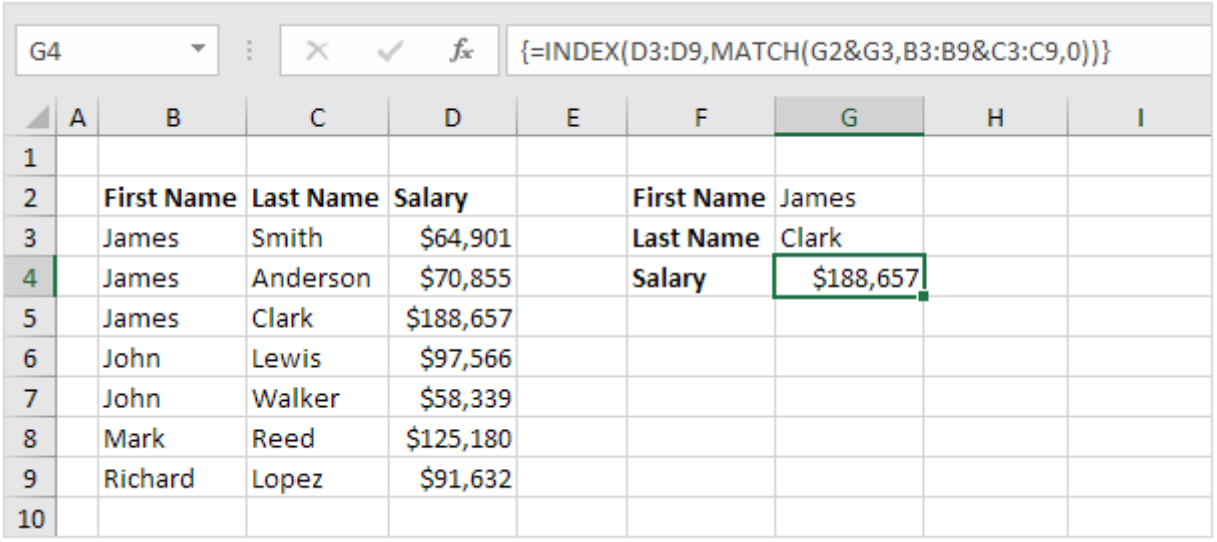
B2 | =INDEX($E$4:$E$7,MATCH(A2,$G$4:$G$7,0))

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ID | Product | | | | | | | |
| 2 | 104 | Printer | | | | | | | |
| 3 | 103 | | | | Product | Brand | ID | | |
| 4 | 104 | | | | Computer | Dell | 101 | | |
| 5 | 101 | | | | Keyboard | Logitech | 102 | | |
| 6 | 102 | | | | Mouse | Logitech | 103 | | |
| 7 | 103 | | | | Printer | HP | 104 | | |
| 8 | 101 | | | | | | | | |
| 9 | 104 | | | | | | | | |
| 10 | 101 | | | | | | | | |
| 11 | 102 | | | | | | | | |
| 12 | | | | | | | | | |

# Lookup & Reference Functions

## Two-column Lookup

Do you want to look up a value based on multiple criteria? Use the INDEX and the MATCH function in Excel to perform a two-column lookup.




| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | **First Name** | **Last Name** | **Salary** | | **First Name** | James | | |
| 3 | | James | Smith | $64,901 | | **Last Name** | Clark | | |
| 4 | | James | Anderson | $70,855 | | **Salary** | $188,657 | | |
| 5 | | James | Clark | $188,657 | | | | | |
| 6 | | John | Lewis | $97,566 | | | | | |
| 7 | | John | Walker | $58,339 | | | | | |
| 8 | | Mark | Reed | $125,180 | | | | | |
| 9 | | Richard | Lopez | $91,632 | | | | | |
| 10 | | | | | | | | | |

## Closest Match

To find the closest match to a target value in a data column, use the INDEX, MATCH, ABS and the MIN function in Excel.

F3 {=INDEX(B3:B9,MATCH(MIN(ABS(C3:C9-F2)),ABS(C3:C9-F2),0))}

| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | |
| 2 | | **Name** | **Data** | | **Target** | 720 | | | | |
| 3 | | Emily | 681 | | **Match** | James | | | | |
| 4 | | James | 734 | | | | | | | |
| 5 | | Mia | 683 | | | | | | | |
| 6 | | John | 704 | | | | | | | |
| 7 | | Jessica | 698 | | | | | | | |
| 8 | | Mark | 736 | | | | | | | |
| 9 | | Richard | 703 | | | | | | | |
| 10 | | | | | | | | | | |

UNIVERSIDADE
PORTUCALENSE

Do conhecimento à prática.



DEPARTAMENTO CIÊNCIA
E TECNOLOGIA