



Regras:

1. Se este template não for submetido e preenchido corretamente, será atribuída a cotação zero ao laboratório;
2. Não se esqueça de submeter a pasta com o projeto do laboratório (código-fonte + makefile); sem código é atribuído zero ao laboratório.
3. Não "falsifique" os outputs dos níveis; alguma situação dessas resultará na atribuição de zero a dois laboratórios consecutivos.

Identificação Alunos

- 190221093 | Alexandre Coelho
- 190221128 | Sérgio Veríssimo

Nível 1 – Código de teste + output

```
KahootReport kr = KahootReportCreate(1,3,"Alex",3956,5,1);  
KahootReportPrint(kr);  
return EXIT_SUCCESS;
```

Output:

1 | 3 | Alex | 3956 | 5 | 1

Nível 2 – Código de teste + output

```
PtList kr = NULL;  
importKahootFromFile("kahootReports.csv",&kr);  
listPrint(kr);  
listDestroy(&kr);  
return EXIT_SUCCESS;
```

Output:

95 kahoot reports were read!

List contents (by rank):

Rank 0: 1 | 1 | Frank | 4259 | 5 | 1

Rank 1: 1 | 2 | Mick | 4211 | 5 | 1

Rank 2: 1 | 3 | Tony | 3956 | 5 | 1

Rank 3: 1 | 4 | Peppe | 3740 | 4 | 2
 Rank 4: 1 | 5 | Gabriel | 3722 | 5 | 1
 Rank 5: 1 | 6 | Rick | 3586 | 4 | 2
 Rank 6: 1 | 7 | Cory | 3571 | 4 | 2
 Rank 7: 1 | 8 | Sofi | 3509 | 4 | 2
 Rank 8: 1 | 9 | Theo | 3367 | 4 | 2
 Rank 9: 1 | 10 | Vi | 3200 | 4 | 2
 Rank 10: 1 | 11 | Alf | 3105 | 4 | 2
 Rank 11: 1 | 12 | Russ | 3068 | 4 | 2
 Rank 12: 1 | 13 | Johnny | 2951 | 4 | 2
 Rank 13: 1 | 14 | Dick | 2721 | 3 | 3
 Rank 14: 1 | 15 | Mike | 2518 | 3 | 3
 Rank 15: 1 | 16 | Michl | 2414 | 3 | 3
 Rank 16: 1 | 17 | Bernie | 1635 | 2 | 4
 Rank 17: 1 | 18 | Kahoot | 1576 | 2 | 4
 Rank 18: 1 | 19 | Andy | 1283 | 2 | 4
 Rank 19: 1 | 20 | Fred | 1196 | 2 | 4
 Rank 20: 1 | 21 | Peter | 743 | 1 | 5
 Rank 21: 1 | 22 | Someone | 0 | 0 | 6
 Rank 22: 1 | 23 | Walt | 0 | 0 | 6
 Rank 23: 2 | 1 | Michl | 10485 | 9 | 1
 Rank 24: 2 | 2 | Frank | 9968 | 9 | 1
 Rank 25: 2 | 3 | Sofi | 8421 | 8 | 2
 Rank 26: 2 | 4 | Mick | 8109 | 8 | 2
 Rank 27: 2 | 5 | Theo | 7901 | 7 | 3
 Rank 28: 2 | 6 | Fred | 7151 | 7 | 3
 Rank 29: 2 | 7 | Dick | 6739 | 7 | 3
 Rank 30: 2 | 8 | Peppe | 6501 | 7 | 3
 Rank 31: 2 | 9 | Ned | 6436 | 7 | 3
 Rank 32: 2 | 10 | Bernie | 6141 | 6 | 4
 Rank 33: 2 | 11 | Russ | 5958 | 6 | 4
 Rank 34: 2 | 12 | Rick | 5812 | 6 | 4
 Rank 35: 2 | 13 | Alf | 5735 | 6 | 4
 Rank 36: 2 | 14 | Appy | 5618 | 6 | 4
 Rank 37: 2 | 15 | Vi | 5442 | 6 | 4
 Rank 38: 2 | 16 | Daniel | 4477 | 6 | 4
 Rank 39: 2 | 17 | Teo | 4191 | 5 | 5
 Rank 40: 2 | 18 | Cory | 4169 | 5 | 5
 Rank 41: 2 | 19 | Andy | 3855 | 4 | 6
 Rank 42: 2 | 20 | Roxy | 2412 | 3 | 7
 Rank 43: 2 | 21 | Sennie | 1482 | 2 | 8
 Rank 44: 3 | 1 | Ned | 9169 | 9 | 2
 Rank 45: 3 | 2 | Johnny | 7322 | 8 | 3
 Rank 46: 3 | 3 | Vi | 6579 | 8 | 3
 Rank 47: 3 | 4 | Rick | 6576 | 8 | 3
 Rank 48: 3 | 5 | Sofi | 6175 | 7 | 4
 Rank 49: 3 | 6 | Michl | 5980 | 7 | 4

Rank 50: 3 | 7 | ???? | 5725 | 7 | 4
 Rank 51: 3 | 8 | Bernie | 5562 | 7 | 4
 Rank 52: 3 | 9 | Peppe | 5376 | 6 | 5
 Rank 53: 3 | 10 | Theo | 5284 | 7 | 4
 Rank 54: 3 | 11 | Mick | 5136 | 7 | 4
 Rank 55: 3 | 12 | Sennie | 5062 | 7 | 4
 Rank 56: 3 | 13 | Marco | 4516 | 6 | 5
 Rank 57: 3 | 14 | Dick | 4309 | 6 | 5
 Rank 58: 3 | 15 | Russ | 3794 | 5 | 6
 Rank 59: 3 | 16 | Steve | 2952 | 5 | 6
 Rank 60: 3 | 17 | Stew | 2482 | 3 | 8
 Rank 61: 3 | 18 | Andy | 2173 | 3 | 8
 Rank 62: 3 | 19 | Appy | 1977 | 3 | 8
 Rank 63: 3 | 20 | Larry | 1797 | 2 | 9
 Rank 64: 4 | 1 | Mike | 4864 | 5 | 1
 Rank 65: 4 | 2 | Alf | 4798 | 5 | 1
 Rank 66: 4 | 3 | Mick | 4758 | 5 | 1
 Rank 67: 4 | 4 | Dick | 4751 | 5 | 1
 Rank 68: 4 | 5 | Vi | 4736 | 5 | 1
 Rank 69: 4 | 6 | Johnny | 4716 | 5 | 1
 Rank 70: 4 | 7 | Theo | 4644 | 5 | 1
 Rank 71: 4 | 8 | Frank | 4620 | 5 | 1
 Rank 72: 4 | 9 | Davy | 4348 | 5 | 1
 Rank 73: 4 | 10 | Cathy | 4003 | 4 | 2
 Rank 74: 4 | 11 | Picles | 3862 | 4 | 2
 Rank 75: 4 | 12 | Michl | 3805 | 4 | 2
 Rank 76: 4 | 13 | Russ | 3788 | 4 | 2
 Rank 77: 4 | 14 | Rick | 3504 | 4 | 2
 Rank 78: 4 | 15 | Mark | 2804 | 3 | 3
 Rank 79: 4 | 16 | Roxy | 2699 | 3 | 3
 Rank 80: 4 | 17 | Andy | 2635 | 3 | 3
 Rank 81: 4 | 18 | JJ | 2623 | 3 | 3
 Rank 82: 4 | 19 | Brunch | 0 | 0 | 6
 Rank 83: 5 | 1 | Mick | 4746 | 5 | 2
 Rank 84: 5 | 2 | Theo | 4728 | 5 | 2
 Rank 85: 5 | 3 | Frank | 4686 | 5 | 2
 Rank 86: 5 | 4 | Alf | 4684 | 5 | 2
 Rank 87: 5 | 5 | Michl | 4232 | 4 | 3
 Rank 88: 5 | 6 | Andy | 4102 | 4 | 3
 Rank 89: 5 | 7 | Dick | 3712 | 4 | 3
 Rank 90: 5 | 8 | Johnny | 3700 | 4 | 3
 Rank 91: 5 | 9 | Davy | 3671 | 4 | 3
 Rank 92: 5 | 10 | Russ | 2890 | 3 | 4
 Rank 93: 5 | 11 | Roxy | 2866 | 3 | 4
 Rank 94: 5 | 12 | Rick | 2766 | 3 | 4

Nível 3 – Código de teste + output

```
PtList kr = NULL;
// Nivel 3.11
importKahootFromFile("kahootReports.csv",&kr);
printf("Nivel 3.11\n");
sortByAlphabeticalOrder(&kr);
listPrint(kr);
listDestroy(&kr);

// Nivel 3.12
importKahootFromFile("kahootReports.csv",&kr);
printf("Nivel 3.12\n");
sortByWeekAscendingOrder(&kr);
listPrint(kr);
listDestroy(&kr);
return EXIT_SUCCESS;
```

Output:

95 kahoot reports were read!

```
Nivel 3.11
List contents (by rank):
Rank 0: 3 | 7 | ???? | 5725 | 7 | 4
Rank 1: 2 | 13 | Alf | 5735 | 6 | 4
Rank 2: 1 | 11 | Alf | 3105 | 4 | 2
Rank 3: 4 | 2 | Alf | 4798 | 5 | 1
Rank 4: 5 | 4 | Alf | 4684 | 5 | 2
Rank 5: 3 | 18 | Andy | 2173 | 3 | 8
Rank 6: 2 | 19 | Andy | 3855 | 4 | 6
Rank 7: 4 | 17 | Andy | 2635 | 3 | 3
Rank 8: 1 | 19 | Andy | 1283 | 2 | 4
Rank 9: 5 | 6 | Andy | 4102 | 4 | 3
Rank 10: 2 | 14 | Appy | 5618 | 6 | 4
Rank 11: 3 | 19 | Appy | 1977 | 3 | 8
Rank 12: 1 | 17 | Bernie | 1635 | 2 | 4
Rank 13: 2 | 10 | Bernie | 6141 | 6 | 4
Rank 14: 3 | 8 | Bernie | 5562 | 7 | 4
Rank 15: 4 | 19 | Brunch | 0 | 0 | 6
Rank 16: 4 | 10 | Cathy | 4003 | 4 | 2
Rank 17: 2 | 18 | Cory | 4169 | 5 | 5
Rank 18: 1 | 7 | Cory | 3571 | 4 | 2
Rank 19: 2 | 16 | Daniel | 4477 | 6 | 4
Rank 20: 4 | 9 | Davy | 4348 | 5 | 1
Rank 21: 5 | 9 | Davy | 3671 | 4 | 3
Rank 22: 4 | 4 | Dick | 4751 | 5 | 1
Rank 23: 1 | 14 | Dick | 2721 | 3 | 3
Rank 24: 2 | 7 | Dick | 6739 | 7 | 3
Rank 25: 5 | 7 | Dick | 3712 | 4 | 3
Rank 26: 3 | 14 | Dick | 4309 | 6 | 5
```

Rank 27: 2 | 2 | Frank | 9968 | 9 | 1
 Rank 28: 4 | 8 | Frank | 4620 | 5 | 1
 Rank 29: 1 | 1 | Frank | 4259 | 5 | 1
 Rank 30: 5 | 3 | Frank | 4686 | 5 | 2
 Rank 31: 1 | 20 | Fred | 1196 | 2 | 4
 Rank 32: 2 | 6 | Fred | 7151 | 7 | 3
 Rank 33: 1 | 5 | Gabriel | 3722 | 5 | 1
 Rank 34: 4 | 18 | JJ | 2623 | 3 | 3
 Rank 35: 4 | 6 | Johnny | 4716 | 5 | 1
 Rank 36: 3 | 2 | Johnny | 7322 | 8 | 3
 Rank 37: 5 | 8 | Johnny | 3700 | 4 | 3
 Rank 38: 1 | 13 | Johnny | 2951 | 4 | 2
 Rank 39: 1 | 18 | Kahoot | 1576 | 2 | 4
 Rank 40: 3 | 20 | Larry | 1797 | 2 | 9
 Rank 41: 3 | 13 | Marco | 4516 | 6 | 5
 Rank 42: 4 | 15 | Mark | 2804 | 3 | 3
 Rank 43: 5 | 5 | Michl | 4232 | 4 | 3
 Rank 44: 1 | 16 | Michl | 2414 | 3 | 3
 Rank 45: 4 | 12 | Michl | 3805 | 4 | 2
 Rank 46: 2 | 1 | Michl | 10485 | 9 | 1
 Rank 47: 3 | 6 | Michl | 5980 | 7 | 4
 Rank 48: 1 | 2 | Mick | 4211 | 5 | 1
 Rank 49: 2 | 4 | Mick | 8109 | 8 | 2
 Rank 50: 5 | 1 | Mick | 4746 | 5 | 2
 Rank 51: 3 | 11 | Mick | 5136 | 7 | 4
 Rank 52: 4 | 3 | Mick | 4758 | 5 | 1
 Rank 53: 1 | 15 | Mike | 2518 | 3 | 3
 Rank 54: 4 | 1 | Mike | 4864 | 5 | 1
 Rank 55: 3 | 1 | Ned | 9169 | 9 | 2
 Rank 56: 2 | 9 | Ned | 6436 | 7 | 3
 Rank 57: 1 | 4 | Peppe | 3740 | 4 | 2
 Rank 58: 2 | 8 | Peppe | 6501 | 7 | 3
 Rank 59: 3 | 9 | Peppe | 5376 | 6 | 5
 Rank 60: 1 | 21 | Peter | 743 | 1 | 5
 Rank 61: 4 | 11 | Picles | 3862 | 4 | 2
 Rank 62: 3 | 4 | Rick | 6576 | 8 | 3
 Rank 63: 2 | 12 | Rick | 5812 | 6 | 4
 Rank 64: 1 | 6 | Rick | 3586 | 4 | 2
 Rank 65: 4 | 14 | Rick | 3504 | 4 | 2
 Rank 66: 5 | 12 | Rick | 2766 | 3 | 4
 Rank 67: 2 | 20 | Roxy | 2412 | 3 | 7
 Rank 68: 5 | 11 | Roxy | 2866 | 3 | 4
 Rank 69: 4 | 16 | Roxy | 2699 | 3 | 3
 Rank 70: 1 | 12 | Russ | 3068 | 4 | 2
 Rank 71: 3 | 15 | Russ | 3794 | 5 | 6
 Rank 72: 5 | 10 | Russ | 2890 | 3 | 4
 Rank 73: 2 | 11 | Russ | 5958 | 6 | 4
 Rank 74: 4 | 13 | Russ | 3788 | 4 | 2
 Rank 75: 2 | 21 | Sennie | 1482 | 2 | 8
 Rank 76: 3 | 12 | Sennie | 5062 | 7 | 4

Rank 77: 2 | 3 | Sofi | 8421 | 8 | 2
 Rank 78: 3 | 5 | Sofi | 6175 | 7 | 4
 Rank 79: 1 | 8 | Sofi | 3509 | 4 | 2
 Rank 80: 1 | 22 | Someone | 0 | 0 | 6
 Rank 81: 3 | 16 | Steve | 2952 | 5 | 6
 Rank 82: 3 | 17 | Stew | 2482 | 3 | 8
 Rank 83: 2 | 17 | Teo | 4191 | 5 | 5
 Rank 84: 1 | 9 | Theo | 3367 | 4 | 2
 Rank 85: 3 | 10 | Theo | 5284 | 7 | 4
 Rank 86: 4 | 7 | Theo | 4644 | 5 | 1
 Rank 87: 2 | 5 | Theo | 7901 | 7 | 3
 Rank 88: 5 | 2 | Theo | 4728 | 5 | 2
 Rank 89: 1 | 3 | Tony | 3956 | 5 | 1
 Rank 90: 3 | 3 | Vi | 6579 | 8 | 3
 Rank 91: 4 | 5 | Vi | 4736 | 5 | 1
 Rank 92: 1 | 10 | Vi | 3200 | 4 | 2
 Rank 93: 2 | 15 | Vi | 5442 | 6 | 4
 Rank 94: 1 | 23 | Walt | 0 | 0 | 6

95 kahoot reports were read!

Nível 3.12

List contents (by rank):

Rank 0: 1 | 1 | Frank | 4259 | 5 | 1
 Rank 1: 1 | 2 | Mick | 4211 | 5 | 1
 Rank 2: 1 | 3 | Tony | 3956 | 5 | 1
 Rank 3: 1 | 4 | Peppe | 3740 | 4 | 2
 Rank 4: 1 | 5 | Gabriel | 3722 | 5 | 1
 Rank 5: 1 | 6 | Rick | 3586 | 4 | 2
 Rank 6: 1 | 7 | Cory | 3571 | 4 | 2
 Rank 7: 1 | 8 | Sofi | 3509 | 4 | 2
 Rank 8: 1 | 9 | Theo | 3367 | 4 | 2
 Rank 9: 1 | 10 | Vi | 3200 | 4 | 2
 Rank 10: 1 | 11 | Alf | 3105 | 4 | 2
 Rank 11: 1 | 12 | Russ | 3068 | 4 | 2
 Rank 12: 1 | 13 | Johnny | 2951 | 4 | 2
 Rank 13: 1 | 14 | Dick | 2721 | 3 | 3
 Rank 14: 1 | 15 | Mike | 2518 | 3 | 3
 Rank 15: 1 | 16 | Michl | 2414 | 3 | 3
 Rank 16: 1 | 17 | Bernie | 1635 | 2 | 4
 Rank 17: 1 | 18 | Kahoot | 1576 | 2 | 4
 Rank 18: 1 | 19 | Andy | 1283 | 2 | 4
 Rank 19: 1 | 20 | Fred | 1196 | 2 | 4
 Rank 20: 1 | 21 | Peter | 743 | 1 | 5
 Rank 21: 1 | 22 | Someone | 0 | 0 | 6
 Rank 22: 1 | 23 | Walt | 0 | 0 | 6
 Rank 23: 2 | 1 | Michl | 10485 | 9 | 1
 Rank 24: 2 | 2 | Frank | 9968 | 9 | 1

Rank 25: 2 | 3 | Sofi | 8421 | 8 | 2
 Rank 26: 2 | 4 | Mick | 8109 | 8 | 2
 Rank 27: 2 | 5 | Theo | 7901 | 7 | 3
 Rank 28: 2 | 6 | Fred | 7151 | 7 | 3
 Rank 29: 2 | 7 | Dick | 6739 | 7 | 3
 Rank 30: 2 | 8 | Peppe | 6501 | 7 | 3
 Rank 31: 2 | 9 | Ned | 6436 | 7 | 3
 Rank 32: 2 | 10 | Bernie | 6141 | 6 | 4
 Rank 33: 2 | 11 | Russ | 5958 | 6 | 4
 Rank 34: 2 | 12 | Rick | 5812 | 6 | 4
 Rank 35: 2 | 13 | Alf | 5735 | 6 | 4
 Rank 36: 2 | 14 | Appy | 5618 | 6 | 4
 Rank 37: 2 | 15 | Vi | 5442 | 6 | 4
 Rank 38: 2 | 16 | Daniel | 4477 | 6 | 4
 Rank 39: 2 | 17 | Teo | 4191 | 5 | 5
 Rank 40: 2 | 18 | Cory | 4169 | 5 | 5
 Rank 41: 2 | 19 | Andy | 3855 | 4 | 6
 Rank 42: 2 | 20 | Roxy | 2412 | 3 | 7
 Rank 43: 2 | 21 | Sennie | 1482 | 2 | 8
 Rank 44: 3 | 1 | Ned | 9169 | 9 | 2
 Rank 45: 3 | 2 | Johnny | 7322 | 8 | 3
 Rank 46: 3 | 3 | Vi | 6579 | 8 | 3
 Rank 47: 3 | 4 | Rick | 6576 | 8 | 3
 Rank 48: 3 | 5 | Sofi | 6175 | 7 | 4
 Rank 49: 3 | 6 | Michl | 5980 | 7 | 4
 Rank 50: 3 | 7 | ???? | 5725 | 7 | 4
 Rank 51: 3 | 8 | Bernie | 5562 | 7 | 4
 Rank 52: 3 | 9 | Peppe | 5376 | 6 | 5
 Rank 53: 3 | 10 | Theo | 5284 | 7 | 4
 Rank 54: 3 | 11 | Mick | 5136 | 7 | 4
 Rank 55: 3 | 12 | Sennie | 5062 | 7 | 4
 Rank 56: 3 | 13 | Marco | 4516 | 6 | 5
 Rank 57: 3 | 14 | Dick | 4309 | 6 | 5
 Rank 58: 3 | 15 | Russ | 3794 | 5 | 6
 Rank 59: 3 | 16 | Steve | 2952 | 5 | 6
 Rank 60: 3 | 17 | Stew | 2482 | 3 | 8
 Rank 61: 3 | 18 | Andy | 2173 | 3 | 8
 Rank 62: 3 | 19 | Appy | 1977 | 3 | 8
 Rank 63: 3 | 20 | Larry | 1797 | 2 | 9
 Rank 64: 4 | 1 | Mike | 4864 | 5 | 1
 Rank 65: 4 | 2 | Alf | 4798 | 5 | 1
 Rank 66: 4 | 3 | Mick | 4758 | 5 | 1
 Rank 67: 4 | 4 | Dick | 4751 | 5 | 1
 Rank 68: 4 | 5 | Vi | 4736 | 5 | 1
 Rank 69: 4 | 6 | Johnny | 4716 | 5 | 1
 Rank 70: 4 | 7 | Theo | 4644 | 5 | 1
 Rank 71: 4 | 8 | Frank | 4620 | 5 | 1
 Rank 72: 4 | 9 | Davy | 4348 | 5 | 1
 Rank 73: 4 | 10 | Cathy | 4003 | 4 | 2
 Rank 74: 4 | 11 | Picles | 3862 | 4 | 2

Rank 75: 4 | 12 | Michl | 3805 | 4 | 2
 Rank 76: 4 | 13 | Russ | 3788 | 4 | 2
 Rank 77: 4 | 14 | Rick | 3504 | 4 | 2
 Rank 78: 4 | 15 | Mark | 2804 | 3 | 3
 Rank 79: 4 | 16 | Roxy | 2699 | 3 | 3
 Rank 80: 4 | 17 | Andy | 2635 | 3 | 3
 Rank 81: 4 | 18 | JJ | 2623 | 3 | 3
 Rank 82: 4 | 19 | Brunch | 0 | 0 | 6
 Rank 83: 5 | 1 | Mick | 4746 | 5 | 2
 Rank 84: 5 | 2 | Theo | 4728 | 5 | 2
 Rank 85: 5 | 3 | Frank | 4686 | 5 | 2
 Rank 86: 5 | 4 | Alf | 4684 | 5 | 2
 Rank 87: 5 | 5 | Michl | 4232 | 4 | 3
 Rank 88: 5 | 6 | Andy | 4102 | 4 | 3
 Rank 89: 5 | 7 | Dick | 3712 | 4 | 3
 Rank 90: 5 | 8 | Johnny | 3700 | 4 | 3
 Rank 91: 5 | 9 | Davy | 3671 | 4 | 3
 Rank 92: 5 | 10 | Russ | 2890 | 3 | 4
 Rank 93: 5 | 11 | Roxy | 2866 | 3 | 4
 Rank 94: 5 | 12 | Rick | 2766 | 3 | 4

Nível 4 – Código de teste + output

```

PtList kr = NULL;
int week = 0;
int a = 0;
importKahootFromFile("kahootReports.csv",&kr);
printf("Insert week number: ");
scanf("%d",&week);
a = getQuestions(&kr,week);
printf("This week %d had %d questions\n",week,a);
totalAverageScore(&kr);
listDestroy(&kr);
return EXIT_SUCCESS;
  
```

Output:

95 kahoot reports were read!

Insert week number: 3

This week 3 had 19 questions

Week	Total_Score Average
1	4259.00
2	4211.00
3	3956.00
4	3740.00
5	3722.00

Nível 5 – Código de teste + output

```
//Calculate time taken by a code segment
printf("Timer starts\n");

timestamp_t t0 = get_timestamp();

// CODE TO TESTE <---- HERE ---->
PtList kr = NULL;
importKahootFromFile("kahootReports.csv",&kr);
listPrint(kr);

printf("Timer ends\n");

// caculate the elapsed time
timestamp_t t1 = get_timestamp();
double secs = (t1-t0) / 1000000.0L;

printf("The program took %f microseconds to execute\n",secs);
listDestroy(&kr);
return EXIT_SUCCESS;
```

Output:

```

Timer starts

95 kahoot reports were read!

List contents (by rank):
Rank 0: 1 | 1 | Frank | 4259 | 5 | 1
Rank 1: 1 | 2 | Mick | 4211 | 5 | 1
Rank 2: 1 | 3 | Tony | 3956 | 5 | 1
Rank 3: 1 | 4 | Peppe | 3740 | 4 | 2
Rank 4: 1 | 5 | Gabriel | 3722 | 5 | 1
Rank 5: 1 | 6 | Rick | 3586 | 4 | 2
Rank 6: 1 | 7 | Cory | 3571 | 4 | 2
Rank 7: 1 | 8 | Sofi | 3509 | 4 | 2
Rank 8: 1 | 9 | Theo | 3367 | 4 | 2
Rank 9: 1 | 10 | Vi | 3200 | 4 | 2
Rank 10: 1 | 11 | Alf | 3105 | 4 | 2
Rank 11: 1 | 12 | Russ | 3068 | 4 | 2
Rank 12: 1 | 13 | Johnny | 2951 | 4 | 2
Rank 13: 1 | 14 | Dick | 2721 | 3 | 3
Rank 14: 1 | 15 | Mike | 2518 | 3 | 3
Rank 15: 1 | 16 | Michl | 2414 | 3 | 3
Rank 16: 1 | 17 | Bernie | 1635 | 2 | 4
Rank 17: 1 | 18 | Kahoot | 1576 | 2 | 4
Rank 18: 1 | 19 | Andy | 1283 | 2 | 4
Rank 19: 1 | 20 | Fred | 1196 | 2 | 4
Rank 20: 1 | 21 | Peter | 743 | 1 | 5
Rank 21: 1 | 22 | Someone | 0 | 0 | 6
Rank 22: 1 | 23 | Walt | 0 | 0 | 6
Rank 23: 2 | 1 | Michl | 10485 | 9 | 1
Rank 24: 2 | 2 | Frank | 9968 | 9 | 1
Rank 25: 2 | 3 | Sofi | 8421 | 8 | 2
Rank 26: 2 | 4 | Mick | 8109 | 8 | 2
Rank 27: 2 | 5 | Theo | 7901 | 7 | 3
Rank 28: 2 | 6 | Fred | 7151 | 7 | 3
Rank 29: 2 | 7 | Dick | 6739 | 7 | 3
Rank 30: 2 | 8 | Peppe | 6501 | 7 | 3
Rank 31: 2 | 9 | Ned | 6436 | 7 | 3
Rank 32: 2 | 10 | Bernie | 6141 | 6 | 4
Rank 33: 2 | 11 | Russ | 5958 | 6 | 4
Rank 34: 2 | 12 | Rick | 5812 | 6 | 4
Rank 35: 2 | 13 | Alf | 5735 | 6 | 4
Rank 36: 2 | 14 | Appy | 5618 | 6 | 4
Rank 37: 2 | 15 | Vi | 5442 | 6 | 4
Rank 38: 2 | 16 | Daniel | 4477 | 6 | 4
Rank 39: 2 | 17 | Teo | 4191 | 5 | 5
Rank 40: 2 | 18 | Cory | 4169 | 5 | 5
Rank 41: 2 | 19 | Andy | 3855 | 4 | 6
Rank 42: 2 | 20 | Roxy | 2412 | 3 | 7
Rank 43: 2 | 21 | Sennie | 1482 | 2 | 8
Rank 44: 3 | 1 | Ned | 9169 | 9 | 2
Rank 45: 3 | 2 | Johnny | 7322 | 8 | 3
Rank 46: 3 | 3 | Vi | 6579 | 8 | 3
Rank 47: 3 | 4 | Rick | 6576 | 8 | 3
Rank 48: 3 | 5 | Sofi | 6175 | 7 | 4
Rank 49: 3 | 6 | Michl | 5980 | 7 | 4
Rank 50: 3 | 7 | ??? | 5725 | 7 | 4
Rank 51: 3 | 8 | Bernie | 5562 | 7 | 4
Rank 52: 3 | 9 | Peppe | 5376 | 6 | 5
Rank 53: 3 | 10 | Theo | 5284 | 7 | 4
Rank 54: 3 | 11 | Mick | 5136 | 7 | 4
Rank 55: 3 | 12 | Sennie | 5062 | 7 | 4
Rank 56: 3 | 13 | Marco | 4516 | 6 | 5
Rank 57: 3 | 14 | Dick | 4309 | 6 | 5
Rank 58: 3 | 15 | Russ | 3794 | 5 | 6
Rank 59: 3 | 16 | Steve | 2952 | 5 | 6
Rank 60: 3 | 17 | Stew | 2482 | 3 | 8
Rank 61: 3 | 18 | Andy | 2173 | 3 | 8
Rank 62: 3 | 19 | Appy | 1977 | 3 | 8
Rank 63: 3 | 20 | Larry | 1797 | 2 | 9
Rank 64: 4 | 1 | Mike | 4864 | 5 | 1
Rank 65: 4 | 2 | Alf | 4798 | 5 | 1
Rank 66: 4 | 3 | Mick | 4758 | 5 | 1
Rank 67: 4 | 4 | Dick | 4751 | 5 | 1
Rank 68: 4 | 5 | Vi | 4736 | 5 | 1
Rank 69: 4 | 6 | Johnny | 4716 | 5 | 1
Rank 70: 4 | 7 | Theo | 4644 | 5 | 1
Rank 71: 4 | 8 | Frank | 4620 | 5 | 1
Rank 72: 4 | 9 | Davy | 4348 | 5 | 1
Rank 73: 4 | 10 | Cathy | 4003 | 4 | 2
Rank 74: 4 | 11 | Picles | 3862 | 4 | 2
Rank 75: 4 | 12 | Michl | 3805 | 4 | 2
Rank 76: 4 | 13 | Russ | 3788 | 4 | 2
Rank 77: 4 | 14 | Rick | 3504 | 4 | 2
Rank 78: 4 | 15 | Mark | 2804 | 3 | 3
Rank 79: 4 | 16 | Roxy | 2699 | 3 | 3
Rank 80: 4 | 17 | Andy | 2635 | 3 | 3
Rank 81: 4 | 18 | JJ | 2623 | 3 | 3
Rank 82: 4 | 19 | Brunch | 0 | 0 | 6
Rank 83: 5 | 1 | Mick | 4746 | 5 | 2
Rank 84: 5 | 2 | Theo | 4728 | 5 | 2
Rank 85: 5 | 3 | Frank | 4686 | 5 | 2
Rank 86: 5 | 4 | Alf | 4684 | 5 | 2
Rank 87: 5 | 5 | Michl | 4232 | 4 | 3
Rank 88: 5 | 6 | Andy | 4102 | 4 | 3
Rank 89: 5 | 7 | Dick | 3712 | 4 | 3
Rank 90: 5 | 8 | Johnny | 3700 | 4 | 3
Rank 91: 5 | 9 | Davy | 3671 | 4 | 3
Rank 92: 5 | 10 | Russ | 2890 | 3 | 4
Rank 93: 5 | 11 | Roxy | 2866 | 3 | 4
Rank 94: 5 | 12 | Rick | 2766 | 3 | 4

Timer ends
The program took 0.000930 microseconds to execute

```

Figura 1 - List Array List

```

Timer starts

95 kahoot reports were read!

Rank 0: 1 | 1 | Frank | 4259 | 5 | 1
Rank 1: 1 | 2 | Mick | 4211 | 5 | 1
Rank 2: 1 | 3 | Tony | 3956 | 5 | 1
Rank 3: 1 | 4 | Peppe | 3740 | 4 | 2
Rank 4: 1 | 5 | Gabriel | 3722 | 5 | 1
Rank 5: 1 | 6 | Rick | 3586 | 4 | 2
Rank 6: 1 | 7 | Cory | 3571 | 4 | 2
Rank 7: 1 | 8 | Sofi | 3509 | 4 | 2
Rank 8: 1 | 9 | Theo | 3367 | 4 | 2
Rank 9: 1 | 10 | Vi | 3200 | 4 | 2
Rank 10: 1 | 11 | Alf | 3105 | 4 | 2
Rank 11: 1 | 12 | Russ | 3068 | 4 | 2
Rank 12: 1 | 13 | Johnny | 2951 | 4 | 2
Rank 13: 1 | 14 | Dick | 2721 | 3 | 3
Rank 14: 1 | 15 | Mike | 2518 | 3 | 3
Rank 15: 1 | 16 | Michl | 2414 | 3 | 3
Rank 16: 1 | 17 | Bernie | 1635 | 2 | 4
Rank 17: 1 | 18 | Kahoot | 1576 | 2 | 4
Rank 18: 1 | 19 | Andy | 1283 | 2 | 4
Rank 19: 1 | 20 | Fred | 1196 | 2 | 4
Rank 20: 1 | 21 | Peter | 743 | 1 | 5
Rank 21: 1 | 22 | Someone | 0 | 0 | 6
Rank 22: 1 | 23 | Walt | 0 | 0 | 6
Rank 23: 2 | 1 | Michl | 10485 | 9 | 1
Rank 24: 2 | 2 | Frank | 9968 | 9 | 1
Rank 25: 2 | 3 | Sofi | 8421 | 8 | 2
Rank 26: 2 | 4 | Mick | 8109 | 8 | 2
Rank 27: 2 | 5 | Theo | 7901 | 7 | 3
Rank 28: 2 | 6 | Fred | 7151 | 7 | 3
Rank 29: 2 | 7 | Dick | 6739 | 7 | 3
Rank 30: 2 | 8 | Peppe | 6501 | 7 | 3
Rank 31: 2 | 9 | Ned | 6436 | 7 | 3
Rank 32: 2 | 10 | Bernie | 6141 | 6 | 4
Rank 33: 2 | 11 | Russ | 5958 | 6 | 4
Rank 34: 2 | 12 | Rick | 5812 | 6 | 4
Rank 35: 2 | 13 | Alf | 5735 | 6 | 4
Rank 36: 2 | 14 | Appy | 5618 | 6 | 4
Rank 37: 2 | 15 | Vi | 5442 | 6 | 4
Rank 38: 2 | 16 | Daniel | 4477 | 6 | 4
Rank 39: 2 | 17 | Teo | 4191 | 5 | 5
Rank 40: 2 | 18 | Cory | 4169 | 5 | 5
Rank 41: 2 | 19 | Andy | 3855 | 4 | 6
Rank 42: 2 | 20 | Roxy | 2412 | 3 | 7
Rank 43: 2 | 21 | Sennie | 1482 | 2 | 8
Rank 44: 3 | 1 | Ned | 9169 | 9 | 2
Rank 45: 3 | 2 | Johnny | 7322 | 8 | 3
Rank 46: 3 | 3 | Vi | 6579 | 8 | 3
Rank 47: 3 | 4 | Rick | 6576 | 8 | 3
Rank 48: 3 | 5 | Sofi | 6175 | 7 | 4
Rank 49: 3 | 6 | Michl | 5980 | 7 | 4

Rank 50: 3 | 7 | ??? | 5725 | 7 | 4
Rank 51: 3 | 8 | Bernie | 5562 | 7 | 4
Rank 52: 3 | 9 | Peppe | 5376 | 6 | 5
Rank 53: 3 | 10 | Theo | 5284 | 7 | 4
Rank 54: 3 | 11 | Mick | 5136 | 7 | 4
Rank 55: 3 | 12 | Sennie | 5062 | 7 | 4
Rank 56: 3 | 13 | Marco | 4516 | 6 | 5
Rank 57: 3 | 14 | Dick | 4309 | 6 | 5
Rank 58: 3 | 15 | Russ | 3794 | 5 | 6
Rank 59: 3 | 16 | Steve | 2952 | 5 | 6
Rank 60: 3 | 17 | Stew | 2482 | 3 | 8
Rank 61: 3 | 18 | Andy | 2173 | 3 | 8
Rank 62: 3 | 19 | Appy | 1977 | 3 | 8
Rank 63: 3 | 20 | Larry | 1797 | 2 | 9
Rank 64: 4 | 1 | Mike | 4864 | 5 | 1
Rank 65: 4 | 2 | Alf | 4798 | 5 | 1
Rank 66: 4 | 3 | Mick | 4758 | 5 | 1
Rank 67: 4 | 4 | Dick | 4751 | 5 | 1
Rank 68: 4 | 5 | Vi | 4736 | 5 | 1
Rank 69: 4 | 6 | Johnny | 4716 | 5 | 1
Rank 70: 4 | 7 | Theo | 4644 | 5 | 1
Rank 71: 4 | 8 | Frank | 4620 | 5 | 1
Rank 72: 4 | 9 | Davy | 4348 | 5 | 1
Rank 73: 4 | 10 | Cathy | 4003 | 4 | 2
Rank 74: 4 | 11 | Picles | 3862 | 4 | 2
Rank 75: 4 | 12 | Michl | 3805 | 4 | 2
Rank 76: 4 | 13 | Russ | 3788 | 4 | 2
Rank 77: 4 | 14 | Rick | 3504 | 4 | 2
Rank 78: 4 | 15 | Mark | 2804 | 3 | 3
Rank 79: 4 | 16 | Roxy | 2699 | 3 | 3
Rank 80: 4 | 17 | Andy | 2635 | 3 | 3
Rank 81: 4 | 18 | JJ | 2623 | 3 | 3
Rank 82: 4 | 19 | Brunch | 0 | 0 | 6
Rank 83: 5 | 1 | Mick | 4746 | 5 | 2
Rank 84: 5 | 2 | Theo | 4728 | 5 | 2
Rank 85: 5 | 3 | Frank | 4686 | 5 | 2
Rank 86: 5 | 4 | Alf | 4684 | 5 | 2
Rank 87: 5 | 5 | Michl | 4232 | 4 | 3
Rank 88: 5 | 6 | Andy | 4102 | 4 | 3
Rank 89: 5 | 7 | Dick | 3712 | 4 | 3
Rank 90: 5 | 8 | Johnny | 3700 | 4 | 3
Rank 91: 5 | 9 | Davy | 3671 | 4 | 3
Rank 92: 5 | 10 | Russ | 2890 | 3 | 4
Rank 93: 5 | 11 | Roxy | 2866 | 3 | 4
Rank 94: 5 | 12 | Rick | 2766 | 3 | 4

Timer ends
The program took 0.000868 microseconds to execute

```

Figura 2 - List Linked List

A implementação com linked list é mais rápida (0,000062 microssegundos) que a implementação com array list.