El futuro digital es de todos

MinTIC

ENGLISH COMPONENT - CYCLE 1 SESSION 10 / 11

CLASSICAL ALGORITHMS SEARCHING AND SORTING

USER FEEDBACK IN SOFTWARE

WORKSHEET 1. 10 / 11

Universidad de Caldas

Worksheet 10 / 11 .1

Do the following tasks:

1. Order these countries from the smallest to the biggest:
   Russia, Colombia, Vatican, India

2. Find the action movie in this list:
   Titanic, Avatar, The Conjuring, Fast and furious

3. Order these subjects alphabetically:
   Spanish, Mathematics, Physics, Biology

4. Find the anime movie in this list:
   Justice League, Your Name, Zootopia, Batman

5. Order these countries from the biggest to the smallest:
   Kazakhstan, Japan, Canada, China

6. Find the fastest animal in the list:
   Cheetah, Marlin, Peregrine Falcon, Zebra

7. Order these subjects Z-A:
   Arts, Computers, Literature, Science

8. Find the Ancient Marvel in the list:
   Machupichu, Chitchén Itzá, Great Pyramid, Great Wall of China

9. Order these animals from lightest to the heaviest:
   Indian Elephant, Giraffe, Blue Whale, African Elephant

10. Find the highest currency value in the world:
    Kuwaiti Dinar, British Pound, Euro, Dollar

Worksheet 10 / 11 .2

Match the vocabulary word with the antonym. Then Match each concept with the corresponding word.

Antonym	Antonym	Antonym
Abandon	Disorder	None
Later	Whole	Output
Lose	Disorganized	Length

Search……Abandon…….

Sort…Disorder……

Each……None……

Until…Later……

Input…Output……

Find…lose……

Ordered…Disorganized……

Height…Length……

Middle…Whole……

1. ___Middle_____: the point or position at an equal distance from the sides, edges, or ends of something.
2. ___Each_____: used to refer to every one of two or more people or things.
3. _____sort_____: arrange systematically in groups; separate according to type.

4. ___until_____: up to the point in time or the event mentioned.
5. ___find_____: identify (something) as being present.
6. ___ordered_____: arranged in a methodical way.
7. ____height_____: the measurement of someone or something from head to foot or from base to top.
8. ___input_____: information that is "put in" to something (entry).
9. ___search_____: try to find something by looking.

Worksheet 10 / 11 .3

Top Algorithms You Really Need To Know

If you want to become a software engineer, the most basic thing that you have to learn are algorithms and data structures. The more algorithms and data structures you learn, the more useful they will be in your career as a software engineer. To start, let's learn Search and Sort, two classes of algorithms a programmer can't live without.

Searching

There are two categories of *search* algorithms we will study: linear and binary.

Linear search

Linear search algorithms means that the program will look at each item in the line (=input) until it finds the necessary item. If you have 100 items and you need to search for one specific item, then you have to look at every item in the input before you find the necessary item. Linear = simple. For example: imagine you want to find your friend

Maria in a line of people standing in no particular order. You already know Maria´s appearance, so you have to look at each person, one by one, in sequence, until you recognize Maria. In doing so, you follow the linear search algorithm.

Binary search

Binary search (binary - “relating to 2 things”) works by dividing the input into two parts until it finds the necessary item. One part contains the necessary item and the other part does not. It is faster than linear search, but it only works with ordered sequences – and this is very important, because the linear search does not need an ordered sequence. For example: imagine you’re want to find your friend John (who is 170 cm tall) in a line of people ordered by height from left to right, shortest to tallest. It is a very long line, and you do not have time to go one-by-one like with the linear search. What can you do? Use binary search. You select the person in the middle of the line, and measure their height. The person is 165 cm tall. You immediately know that this person, and all the people on their left, is not John. Next, you turn your attention to the people on the right and select the middle person again. The person is 172 cm tall. You can eliminate that person and all the people on the right. And so on, until you find the person who is 170 cm tall – and that is John. In doing so, you follow the binary search algorithm.

Sorting

Sorting is a synonym of ordering. It is one of the most common programming tasks. We will look at one type of sorting - Merge Sort.

MergeSort

Imagine you have an unordered group of people, and you need to order them by height. First, you divide the group in two; then you divide each of the two groups in two again, and so on – until you have individuals. Second, you put individuals in pairs; you put the taller person to the right, until you organize all the pairs. Next, you put pairs in groups of four, and order them. After that, you put the groups of four into groups of eight. And so on, until you have a complete line of people ordered by height. By doing so, you follow the Merge Sort algorithm.

Worksheet 10 / 11 .4

User Feedback in Software

Read carefully every word and then write them down in front of their definition.

Feedback Team Feature Improve Developer Test case Update Bug Complaint Improve User Useful

1. Feedfack: Information or statements of opinion about something, such as a new product, that can tell you if it is successful or liked.
2. User : Someone who uses a product, machine, or service.
3. __Complaint__: A statement that something is unsatisfactory or unacceptable.
4. __improve____: To cause something to get better.
5. __feature_: A typical quality or an important part of something.
6. ____try_____: To attempt to do something.

7. ____developer_____: A person or company that creates new products, especially computer products such as software.
8. ___test case_____: An event or action that may serve as a guide to the likely outcome of subsequent similar situations.
9. ____useful_____: Effective; helping you to do or achieve something.
10. ___update_____: To make something more modern or suitable for use now by adding new information or changing its design.
11. _____team_____: A number of people or animals who do something together as a group.
12. ____bug_____: A mistake or problem in a computer program.

Worksheet 10 / 11 .5

User Feedback in Software Development

Feedback is a very important component in any work. Feedback helps you clarify your understanding. Feedback helps you see things in new ways.
Feedback helps you correct your course. Feedback helps you learn.
Feedback makes you and your work better.

Introduction

Software is created to satisfy **user**'s requirements. A software is good if the majority of the users have no **complaint** about it after using for a long time.

As a consequence, more and more attention today is paid to user feedback. Software companies want to know what their users really

think of their products, which aspect they consider important, what functions they expect, etc. They want to learn as much as possible from their users to improve their product quality.

Particular Characteristics of User Feedback in Software Development

User feedback is important to all types of product development, and software is no exception. However, different to others, software development has its own **features** that make user feedback different.

First of all, in software development it is impossible to predict all the problems in advance. The only way the developer can know if the software works or not is by letting users **try** them. Although the **developers** can write some **test cases**, those test cases are created from the point of view of the developers and not from the point of view of the users. Only when developers receive feedback from the users can they really know what's wrong.

Second, even only one user´s feedback can be **useful** for software development. Of course, the more users give feedback, the better for the developers, but sometimes even one comment can help improve the product.

Additionally, **updates** are necessary in software development, especially for mobile applications. If an application stops updating for several months or even several weeks, people will use other applications with similar functions instead. Logically, the updates take into account the information from the user feedback.

Finally, it is widely accepted that positive user feedback will make the development **team** much more confident. So user feedback is not only about negative comments and reports of **bugs**, it is also about good things that people like about programs and applications.

Conclusion

The quality of the product is always the most important thing during software development. No matter how well we know our users, if we cannot satisfy their requirements, our work means nothing. In software development, it is impossible to predict all the problems before people start using the program/application. Remember that negative feedback is better than no feedback. Any information can be useful, it just depends on how we use it.

Worksheet 10 / 11 .6

WRAP-UP

Read the following situations and figure out which of the three algorithms you have to use in each situation: **linear search, binary search or MergeSort.**

1. There are 30 students in class. You need them to stand in a line according to their age, from the youngest to the oldest, from right to left. (**binary search)**

2. You have 15 circles that are ordered in the line from the smallest (2 cm diameter) to the biggest (50 cm diameter). You need to find the circle that is 22 cm in diameter. (**linear search)**

3. You are in a supermarket, and your mother asked you to buy coffee that is called “Super Delicious Coffee”. (**MergeSort)**

4. You are in the library, in the section of “Original English Literature”. There are 100 books that are ordered alphabetically. You need to find “Harry Potter and the Order of Phoenix”. (**linear search)**

5. There are 10 people in a bank. The oldest people have a priority. You need to make a line of people taking into account the priority: oldest person first, youngest person last.(**binary search)**

Worksheet 10 / 11 .7

Categorize the following ideas from the text into “Main” and “Secondary”.

- User feedback is the information about users´ positive/negative experience.
- Feedback can include positive and negative comments.

- In software development, it is necessary that people use a program for the developers to know what problems can appear.
- Companies pay a lot of attention to user feedback these days.
- Mobile applications should have frequent updates.
- Software developers can write test cases.
- Companies want to know what functions users expect from their product/service.

MAIN IDEAS	SECONDARY IDEAS
● User feedback is the information about users´ positive/negative experience.} ● In software development, it is necessary that people use a program for the developers to know what problems can appear. ● Companies pay a lot of attention to user feedback these days. ● Companies want to know what functions users expect from their product/service.	● Feedback can include positive and negative comments. ● Mobile applications should have frequent updates. ● Software developers can write test cases.

Worksheet 10 / 11 .8

SELF-EVALUATION

ANSWER THE FOLLOWING QUESTIONS

1. Entiendo qué es “linear search”.

Yes 😃 **Maybe 😐** **No 😟**

2. Entiendo qué es “binary search”.

Yes 😃 **Maybe 😐** **No 😟**

3. Entiendo qué es MergeSort.

Yes 😃 **Maybe 😐** **No 😟**

4. Entiendo qué es “user feedback” y por qué es importante.

Yes 😃 **Maybe 😐** **No 😟**

5. Entiendo cómo utilizar la estrategia de “Looking for main ideas”.

Yes 😃 **Maybe 😐** **No 😟**