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| **المملكة العربية السعودية السعودية**  **وزارة التعليم العالي**  **جامعة الإمام محمد بن سعود الإسلامية**  **كلية علوم الحاسب والمعلومات** | | A description...  **Second term 1441/2020** | **KINGDOM OF SAUDI ARABIA**  **Ministry of Higher Education**  **Al-Imam Mohammad University**  **College of Computer & Information Sciences** |
|  | **Design and analysis algorithms (CS- 310)**  **Section: 171**  **Course Project:**  **Sorting Algorithms**  **Submitted By**  Saad BinOnayq (439017145) – Coordinator  Fawzan alhantoshi (439014363)  Mohammed Alkhalifah (439011298)  **Supervisor**  Ganesh Kumar Perumal  **Date:** 2020\4\4 | | | |

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## **1. Introduction**

Initially, algorithms are one of the foundations of programming and development, and many distinguished programs are one of their strengths in choosing a fast and practical algorithm.

For this in this project, we will create an algorithm for the sortings (Heapsort - insertion Sort) and we will apply them to the Java language and also to the pseudocode, and we will test it with several variables and show the time complexity for each algorithm.

## **2. HeapSort**

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## **2.1 pseudocode**

## **2.2 Time complexity**

## **2.3 Source code**

## **2.4 Output screenshots**

## **3. InsertionSort**

## **3.1 pseudocode**

## **3.2 Time complexity**

## **3.3 Source code**

## **3.4 Output screenshots**

## **4. Results of Heap and Insertion sorts**

## **4.1 Result table**

|  |  |  |
| --- | --- | --- |
| **Input \ algorithm** | **Heap Sort** | **Insertion Sort** |
| **5** |  |  |
| **50** |  |  |
| **100** |  |  |
| **200** |  |  |
| **300** |  |  |

## **4.2 Result Chart**

## **5. Descending HeapSort**

## **5.1 pseudocode**

## **5.2 Source code**

## **5.3 Output screenshots**

## **6. Conclusion**

In conclusion, I hope that we have clarified the sorting algorithms and their codes, their time complexity, and the outputs for each algorithm and the preference between them.

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## **7. References**