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Lapdock: Brainless Laptop

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Abstract: ***Lapdock is based on the idea of providing a variation to our typical laptops and making them more efficient and comfortable to use. It is made up of two words mainly: - lap (seated person's upper leg) and dock (plug or anchor) [1]. Lapdocks do not contain CPU of their own and this makes them different from laptops despite their similar appearance. The good thing about lapdocks is that lapdocks do not store any data in them. The devices are powered by using other devices that come with embedded O.S. For example: - Android phones, Raspberry pi etc. As these lapdocks do not contain any fragile part such as CPU or HDDs, it adds to its durability. All you need to do is to connect your intelligent devices to lapdock using a cable such as an HDMI cable and the lapdock is ready to be used.***

A lapdock is not a typical appliance, but it is the ultimate device and future of laptops. On an average, it is quite rare to change our laptops frequently. Laptops are expensive devices and require a lot of software to be downloaded while purchasing them. For their proper functioning, the software needs to be updated on a regular basis. Along with this, the other devices such as your phones and cameras are also needed to be updated accordingly. Using lapdocks we can get rid of tedious and costly tasks by updating just one device and using it to do our work. It is quite usual for people to change their mobile phones frequently as new and advanced features are launched in the market. With auto update it is easier to keep your phones updated than to update or change your laptop. There can be numerous reasons to change your phones: - phones become slower, crash, the bater might deplete fast, the camera becomes outdated and so on. People require new phones, whether for a new feature, technological development, or merely to modify. So, getting the latest phone is quite common and hence lapdocks are a better option. These devices are durable and need no applications. Infact, they do not require any other technical support so they need not be upgraded or replaced on a regular basis. That is why lapdocks are indeed the future and a workable alternative to owning a single long-lasting item and as a result avoiding obsolete electronic waste.

Keywords: Laptop, Lapdock, Dummy Laptop, Brainless Laptop, Samsung DeX, Nexdock, Software

I. INTRODUCTION

Like laptops, lapdocks contain a screen, run on a battery and have a keyboard. But, unlike laptops, these devices do not contain any processing unit, lapdocks come without any storage or processing of their own.

Lapdock uses the functionalities and computational powers of your device including its memory, and uses it to give you the functionalities of a laptop without spending an exuberant amount on the same.

It is equivalent to carrying a keyboard and attaching an external display to the mobile devices, but in a much more portable way.

Purchasing a lapdock is more expensive than purchasing a keyboard. However, the goal of using lapdock is more than just to make typing easier. It should be regarded as a small and portable device capable of improving your viewing and typing experiences. On an average such a device would cost you around $200.

Unfortunately, there aren't many manufacturers who make them. In fact, there are only two models available on the market right now. At the time of writing, every other model was primarily available for preorder. Even the popular Nexdock is not for sale on the market. [2]

In this paper, we have presented our work on the idea of lapdock, its advantages and future scope.

II. RELATED WORK

Motorola's Atrix 4G laptop dock was revolutionary at the time, launching at CES in the year 2011. The device came with a micro-HDMI out port which was framed to work. The laptop had a screen of around 11.6 inches and the keyboard came with a Bluetooth facility. It appeared to be quite futuristic at that time.

However, it did not gain much popularity. There was no commendable progress in this for six coming years. Nexdock released a promising 14" lapdock in 2017.

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Over 3000 devices were distributed to initial supporters. [2]

With the introduction of Samsung DeX in 2019, things became interesting. The term "DeX" is an abbreviation for "Desktop eXperience." It is a software feature that allows your Android operating system to function like a full desktop operating system when connected to a monitor/laptop, including resizable windows, right-click and keyboard shortcut support, and so on. A reputed android manufacturer focusing on the production of lapdock in itself signifies the future of these devices. [4]

As of now, much work has not been done in this field, which makes it a new field to explore and has a great scope in future

III. PROPOSED METHOD

There are plenty of reasons as to why you should purchase a lapdock even if you own a laptop. With time people are spending more time with their phones as compared with computers. Smartphones are becoming more powerful with the introduction of advanced features and are being extensively used for the purpose of web surfing, gaming etc. With a lapdock the only device that you need to keep updates is your portable device. As there are tasks which cannot be performed on mobile phones, they can be connected to a lapdock to get the work done. A lapdock is much more affordable than a laptop. Laptops are light in weight when compared to laptops and are easier to carry.

Poen Handed Alliance first developed Android. Android is a widely known and anticipated Operating system used for most of the mobile devices. Androids are growing powerful with more and more developments being organized around Android. A lot of new features and applications are available on Android. Hence we have tried to develop an Android based application but the same can be extended to ios as well. [6]

Here we have tried to provide a lapdock at an affordable price. The project is simply a launcher app that allows you to connect your Android phone or other portable devices to a brainless laptop or lapdock.

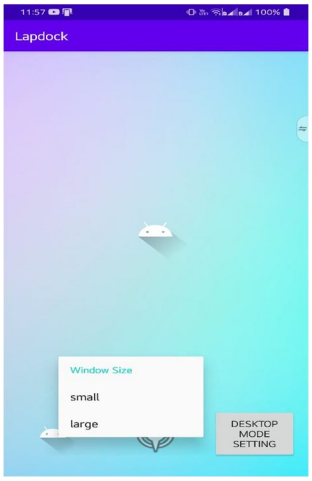


Fig:1 It is the app installed in andriod device with reasonable in app layout and features.

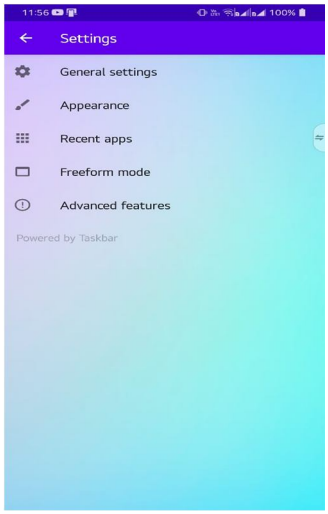


Fig:2 We can keep various features like setttings etc

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IV. APPLICATIONS OF LAPDOCK

A. Make Typing Easier

For anyone whose sole requirement is that of typing, a laptop can appear as an expensive choice. If you need to have a device which makes typing easier and does not burn a hole in your pockets, then lapdock is a great choice. [5]

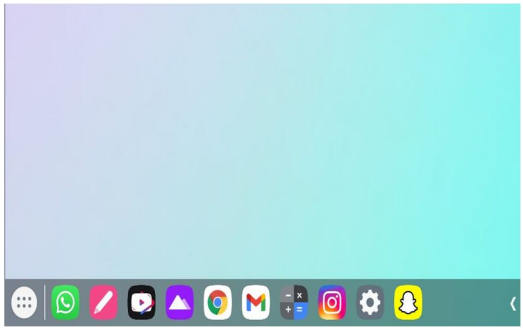


Fig: 3 The screen layout of desktop mode which is appearing in the dummy laptop.

B. Improved Gaming Experience

Lapdock is a great choice for those who enjoy playing games on their mobile phones. It provides you with a larger screen along with other features. You can make it more enjoyable and fun by attaching controllers or simply use your mobile phone in the form of a controller [5]

C. Education, Learning, and Entertainment

Lapdocks are a great aid towards education and can help students with their studies. Students can watch video tutorials and use it to make notes. It can also be used by those who are fond of watching movies and series but do not want to spend on television and laptop as they do not have any other requirement [5]

D. Make use of it as a Portable Display

Portable displays are already expensive. Consider purchasing a lapdock to use as a secondary screen for your laptop. If you have a desktop at home and a laptop at work, you can easily switch between the two and even carry them with you. [5]

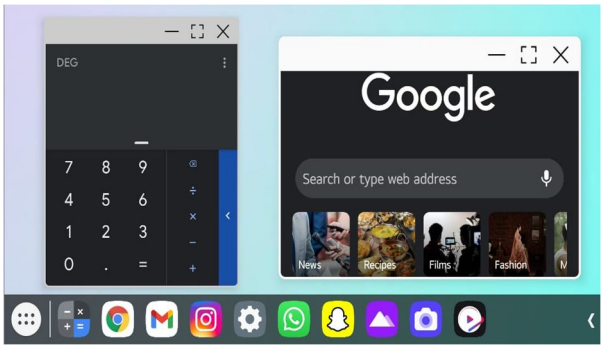


Fig: 4 This is how we can access any app installed in our android device

For those who have monitor less desktops, like a NAS server or home NAS server, a lapdock can be arranged and, set them to perform debugging. This avoids having to move the entire unit. You can use lapdock to set them up and debug them without having to move the entire unit.

V. TECHNOLOGIES REQUIRED: ANDROID DEVELOPMENT, IOS DEVELOPMENT

The project is divided into two parts: software and hardware. Android and iOS are the most popular smartphone operating systems. For this project, we will use Android, but the concepts will be the same for iOS as well.

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VI. SOFTWARE AND HARDWARE REQUIREMENTS

1) *Software:* Android is now a mature operating system. One of the most crucial features of Android is the flexibility that it provides. You can target a specific function and develop an independent application.[6] It has floating windows, resizable activities, native cursor keyboard and mouse support, and so on. Google has added multi-screen support and an experimental desktop mode to Android 10. When a smartphone is connected to a second display, the launcher changes to provide a desktop-like experience with apps in a floating window, a taskbar, a start button, and so on. A launcher app that functions as a regular app and can be downloaded from the app store.

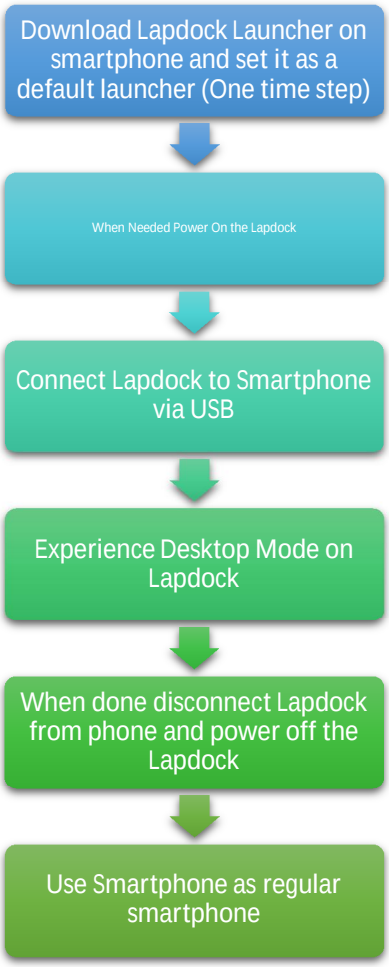


Fig: 5 Flow chart to better understand the entire working.

2) *Hardware:* Hardware is very basic and straightforward. It only has a screen, a keyboard, and a track pad. All of this is powered by a battery. They are arranged in the same manner as a traditional laptop. As a result, they resemble laptops but are lighter and thinner. This dock includes a port for connecting smartphones. When the smartphone is connected to the dock, it turns on and serves as the smartphone's output and input. Speakers or additional ports can be added to the dock to add extra features, but they are not required.

VII. CONCLUSION AND FUTURE WORK

A standard laptop provides an all-in-one personal computer experience. The main idea is to improvise lapdock according to your needs. The idea is that depending on what you connect to your lapdock, Lapdock can be connected to an android device for a laptop based on android, it can be connected to Raspberry pi and you get a machine based on Linux. Not only this, it can also be connected to your iPad. Along with being versatile, these lapdocks are eco-friendly as well. Because there is nothing in the lapdock, hence you do not need to throw it away after certain period. There is nothing that becomes outdated in the near future; thus, it could be the last laptop you ever buy for a decade. It is a low maintenance machine that can be kept up to date easily by internet connection.

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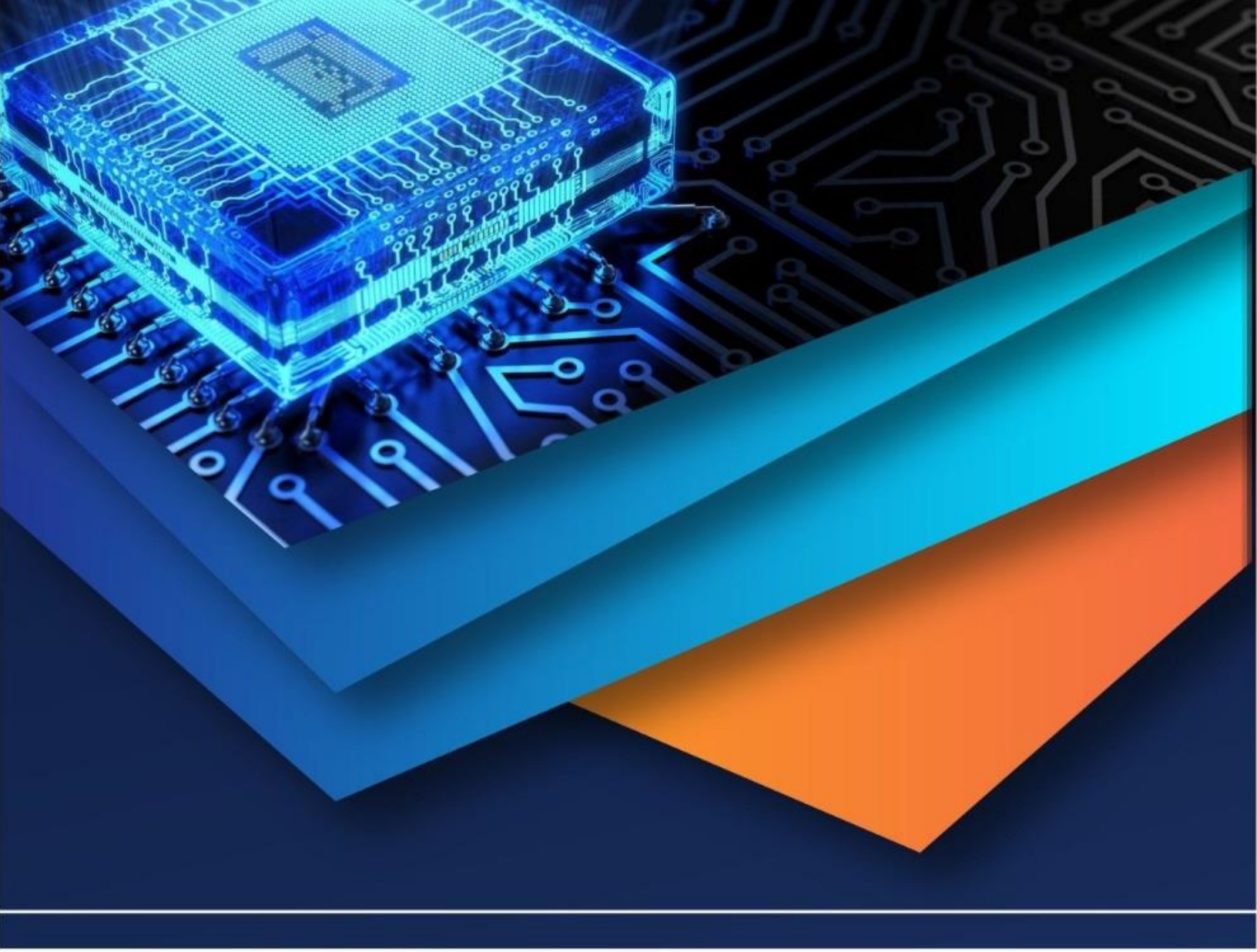
Thus, lapdock allows you to save a lot of time as you do not have to manually update your device as needed in laptops. It also helps you save a lot of money as you do not have to worry about buying software. There is still a long way to go to bridge the gap between the specifications that you get in a laptop versus those that you can get while using a lapdock. For certain uses we still need to own a laptop or PC. Since the product is new and not very popular it needs more time to fully develop and create a place in the market. The cost might not appear affordable to people as its use is still not popular among them.

Once this project is made available in the market, person can simply own a smart phone with Android 10 or more and a LapDock to perform basic computer operations. Only people with high specification requirement will have to go for Desktops or laptops Also, as the android capabilities will grow, we'll be able to perform some more advanced operations. It will require time to time update as other software require. This project will bring a new change in the market and will be replacing low to mid end laptops. Last but not the least, one day android can replace ARM processors and can enable us to perform high end operations too.

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