Assignment ESD

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Briefly discuss the pushing factors of the emerging technologies in Embedded System in healhcare and the issues behind it with examples in order to illustrate your answer.

Demand for medical care and equipment that enables the care to be delivered, has been rising exponentially in recent years. In my opinion there are three, somewhat related reasons for this. First, there are an increasing number of conditions that can now be treated effectively. In the past, it was much more common to be told that you would just have to live with the illness and suffer or you might be told that you were going to die. Of course, all this still happens, but it is much more likely that some treatment will be offered. The second factor is the mean age of the population in countries is rising. We are living longer, and medical treatment requirements tend to increase with age. Lastly, the technology and the pandemic crisis itself. All of this have pushed the embedded system in healthcare to a new level plus with the new addition of IoT in these sectors. Historically, medical instruments were bulky, heavy machines to which the patient was transported when necessary. A few machines could be wheeled about within the hospital, as needed. Nowadays, the big focus is on portable instrumentation. Thanks to the progress in embedded technology and IoT (Internet of Things); we are headed to a future of smaller, smarter, wearable and connected medical devices. we can see the involvement of embedded system in healthcare can be seen in nowadays hospital equipment. These devices are smaller and more portable than ever. Smart devices like blood pressure monitors and glucose monitors are allowing patients to proactively monitor their medical conditions from anywhere. Gone are the times when they were required to go to the hospital or even their home for daily tests. On top of that, medical devices are shrinking in size from cart-sized heavy machines to lightweight handheld devices to implanted devices that are smaller than a matchbook. Example, like the fitness smartwatch whereby in this health-focused watch can take a medical-grade ECG from your wrist, measure your blood oxygen saturation with a SpO2 sensor, and detect breathing disturbances during the night that could be a sign of sleep apnoea. Furthermore, in this watch, the app also gives information about your heart rate, which is tracked 24/7, including your average resting heart rate. There's also a fitness score that equates to your VO2 max, which, like resting heart rate, is a great general indicator of your cardiovascular fitness. Next example in the hospital itself which is, remote patient monitoring, where nowadays people are living increasingly busier lives. They don't have time to visit the doctor or drive a loved-one to see the physician on a daily basis. But, smart, small and powerful monitoring devices powered by embedded technology and connected with the help of IoT

are helping these people monitor and treat their health conditions. These devices, mostly in the form of wearables, analyze the health-related data and share it with medical professionals who can respond with the appropriate recommendations. As a result, such patients are less likely to develop complications in the future.