

Assignment Hospital

Patients on the intensive care are constantly monitored (Isala, 2021¹). These patients require intensive care (obviously). This department has a lot of medical equipment available, to monitor the various patients. To create a better overview of all this equipment and the occupied beds, you have been asked to write software for this.

First, the patient must be registered. The name, date of birth, sex (M/F), heart rate, blood pressure (Systolic and diastolic pressure) (Heart Foundation, 2021²) and whether the patient is still able to walk is recorded.

There are currently two devices in the intensive care unit: a heart monitor and a blood pressure monitor. A serial number and the energy consumption in kWh) are kept for each device. A device can monitor a patient. While monitoring, three statuses can be returned: `normal`, `warning` or `critical`. In Table 1 and Table 2 the properties of the heartrate monitor and blood pressure monitor are shown, with regards to the blood pressure monitor, no difference is made in gender.

HEART MONITOR

STATUS	MALE	FEMALE
NORMAL	Heartrate between 60 and 75	Heartrate between 70 and 80
WARNING	Heartrate between 75 and 100.	Heartrate between 80 and 110
CRITICAL	Heartrate lower than 60 or higher than 100	Heartrate lower than 70 and higher than 110

Table 1, Properties of heartrate monitor

BLOOD PRESSURE MONITOR

STATUS	SYSTOLIC/ DIASTOLIC
NORMAL	Systolic Higher than 120 Diastolic Higher than 80
WARNING	Systolic Higher than 140 or lower than 120 Diastolic Higher than 90 or lower than 80
CRITICAL	Systolic Higher than 180 Diastolic Higher than 110

Table 2, Properties of Blood pressure monitor

Next to a patient's bed in the ICU are one or more medical devices. Of course, there can be no patient on the bed, the bed is then free. In that case the equipment is not used as well. The department itself consists of one or more beds.

Furthermore, the location of the IC is registered (for example "Wing 1A") and how many FTEs (full-time equivalent) are currently working in the IC (if a person works for 1 FTE, that is a full working week, at 0,2 FTE that is one day a week).

¹ Isala (2021, 30 November). *Opname op Intensive care (IC)*. Reviewed on the 7th of December 2021, <https://www.isala.nl/patientenfolders/7248-opname-op-intensive-care-ic/>

² Hartstichting (2021) *Uitleg over je bloeddruk*. Reviewed on the 8th of December 2021, <https://www.hartstichting.nl/risicofactoren/gids-bloeddruk/bloeddrukwaarden?tab=1>

✍ Implement the following

- Make a Use Case Diagram based on the text above.
- Make a class diagram based on the text above.
- Make the application based on your design and the text above.