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CSC0648-01 SWE

SECTION 5

(Non-Functional Requirements)

Purpose: Design web-based dashboard for physical therapists (PTs) to manage patients asynchronously.

Key features

* Authorize PT to **create profile** containing personal and professional details of their practice.
* Enable PT to easily **view current patients and prospective patient** profiles.
* Allow PT to **customize home exercise programs** for patients
  + Upload tutorial video of tailored exercise routines
  + Library of re-usable suggestions aiding in construction of plans
* Permit PT to **review patients’ progress** based on video history
  + View current patient’s home exercise plan
  + View patient’s progress and video history
  + Draw lines on video, calculate angles and estimate poses
  + Slow down video play for focused analysis
  + Submit patient feedback utilizing edited videos
  + Share authorized videos with others
* Connect PT to patients via **messaging platform**
  + Two-way text communication between PT and patient
  + Email notifications with frequency setting
* **Track PT care duration** for each patient
  + User profile indicator records time spent
  + Report generator shows PT activity with patient

High-level non-functional specifications

1. Application’s development, testing, deployment and server tools

* Frontend
  + Node.js (Ver. 4.11.0)
  + React.js (Ver. 16.13.0) \*All modern browsers supported
  + Phonegap (Ver. 9.0.0)
  + Material-UI (Ver. 4.11.0)
  + Client-Server Frameworks: Express (Ver. 4.17.1)
* Backend
  + Frameworks: Apache Spark (Ver2.4.0)
  + Database Frameworks: MongoDB (Version 4.4.0)
  + Host: Amazon Web Services (Ver. EC2)
  + Hosted OS: Ubuntu Server (Ver. 2020)

1. Application is compatible and usable on PC browsers
2. Data is stored in database on deployed server
3. Application is easy to use and intuitive
4. Code is well maintained, easy to read and can facilitate ongoing builds

Operation Group - Describe the user’s needs for using the dashboard’s automated functionality

*Access Security*: System safeguarded against internal and/or external intrusion.

* Password protected areas authenticate and authorize clearance in accessing patient data

*Accessibility*: Software extends user base across range of services and goals

* Americans with Disabilities Act

Availability: User access during “normal operating times”

* Dashboard’s asynchronously platform operates on all modern browsers at all times

Confidentiality: Degree software protects sensitive data and allows authorized access to data

* Medical system’s patient records must follow all state and federal laws
* US Health Insurance Portability and Accountability Act

Efficiency: Extent software handles capacity and response time

* Processor capacity and storage space available on system during peak load
* System restart cycle
* Notifications and report summaries

Integrity: Data maintenance and accuracy without corruption

* Changes made to database are recorded routinely and backed up

Reliability: System performs functions without fail

* Point of interaction delays and/or failure recourse

Safety: Software prevents harm to people as it executes intended content and context of use

* Medical monitoring system dispensing appropriate prescribed treatments

Survivability: System function and recovery

* Data recovery in roll-back

Usability: Ease of use intuitive and effective

* No training is required for product use

Revision Group – User needs addressed and perceived as modifiable

Flexibility: Software is adaptable to different environments and configurations of user expectations

* Universal usage (preferred language)
* Ability to add new user information without affecting earlier forms

Maintainability: Ease of fault discovery in software

* Software testing shows fixable problems in compartmentalized structure
* System shut downs under 24 hours

Modifiability: Cost effective development, deployment, maintenance, modifications and updates

* New product features can be added to source code and tested in less than a week
* Function calls are NOT to be nested more than two levels deep

Scalability: Degree system is able to expand capabilities upward and outward

* Report, text and upload duration limitations

Verifiability: Extent needed to prove system will function as intended

* Test panel for product compliance
* Safety regulations
* System infrastructure and automation
* System updates follow quality assurance

Transition Group – System upkeep, including hardware, software and compatibility

Installability: N/A

* Browser based dashboard

Interoperability: Extent of software interfacing with other systems

* HTML browser interface
* Universally appropriate pictures, icons and symbology
* Local device supports data interface, protocols and security solutions

Portability: Software transferable between environments

* UTC – Universal Time Coordinated
* Targeted market
* Developed for different OS platforms
* Supports minimum color, speed, storage and monitor standards/benchmarks

Reusability: Software ease of conversion between systems

* HTML guidelines and standards
* Client device requirements met