istrator may obtain from the assignee of the present invention, or a licensed developer, a software upgrade. Upgrades may be aimed at testing for particular activity types, provide more stringent screening, or both. Software upgrades are preferably utilized simultaneous with previously installed software, thereby enabling each user to establish a new baseline for the upgrade without losing the use of the baseline established for the previously installed software. After a baseline is established for each user with the upgrade, the system administrator may decide whether users will take a plurality of tests in each test session, or if the previously installed test will be abandoned as soon as each user has a valid baseline for the new test. Another new test can then be introduced. Once a system administrator uses the basic test for a predetermined period of time, such as ninety days or more, other tests which are specific to certain types of jobs or impairments may be used.

The basic test preferably comprises a checkerboard pattern displayed on a display apparatus **15**, as illustrated in FIG. **1**. Other tests may be based on a board having other than an alternating background pattern, or no background pattern. A plurality of squares of alternating colors (e.g., black and white, as shown) are displayed as a background, while various figures, such as rectangles, triangles, or arrows, are displayed in the white squares in various orientations. The user's task is to press YES when all the shapes are the same, even if the various boxes include the same shape in a variety of orientations, and to otherwise press NO. Other tests may also include figures, or they may include other visual methodologies to test alertness. The inventive tester is intended for nonlinguistic use by people from any nation or linguistic origin. Thus, the screens preferably contain little or no language-based information. Preferably only nonlinguistic figures, graphics, or pictograms are used.

Normal functional levels of many aspects of psychomotor functions are preferably required from the user to pass the basic test, including visual perception, information processing, focused attention, decision-making, and eye-hand coordination. The basic test is useful for alertness testing because these psychomotor functions represent a person's general alertness and normal functioning and mental fitness. Thus, failing a test indicates that a user's alertness is reduced to a level below their own normal baseline, due to any cause.

A challenge is presented by those users who would purposely attempt to do poorly during the baselining process to enable them to reach a passing score on a later test, even when their alertness is impaired. To address this concern, the basic test preferably includes minimum performance standards applied to all users. Also, a new baselining period preferably begins for each user at the end of time period set by the system administrator, so that those users who would "cheat" the system will gradually move up in performance if they generally make an effort to pass the test on a regular basis.

The present invention therefore provides an inventive alertness testing apparatus including an adaptive baselining capability and a high level of confidentiality for users' performance and pass/fail information. The tester of the present invention is preferably used in conjunction with an access guarding device which regulates user-access to machinery or work spaces considered dangerous to operate when below a basic, subjective alertness level. The system may also be easily adapted for use as a performance-level tester, a brain function tester, an awakeness tester, a psychomotor function tester, or a predictor of future alertness, awakeness, performance, or psycho-motor function. Indeed, the term "alertness" as used in the above description may be interchanged with these additional terms while still describing the form and function of the present invention. The inventive system may also be used as an assessor of medical fitness as described in provisional patent application serial No. 60/058,841 cited above. In the medical context, the access control device used in combination with the tester could be a medication dispenser, wherein the type and dosage of medication dispensed will depend on the user's score as recorded on the user's datacard or memory button. This description is therefore intended only to provide a preferred and alternative embodiments of the invention, which should be limited in scope only by the appended claims.

What is claimed is:

1. A system for testing the alertness of a user, the system comprising:

a microprocessor;

a visual display apparatus in electrical communication with said microprocessor;

a data I/O port in electrical communication with said microprocessor;

a portable data storage device having a user data memory, the portable data storage device releasably interfaceable with said data I/O port, thereby enabling data downloading to and data uploading from said microprocessor;

a test memory in electrical communication with said microprocessor, said test memory being loaded with at least one executable program comprising a user alertness test and a passing data set, the user alertness test comprising test information displayed on said visual display;

an input mechanism in electrical communication with said microprocessor for receiving input data from the user in response to said test information displayed on said visual display;

said microprocessor thereby being enabled to receive user data from said user data memory, receive said test data from said test memory, display said test information on said visual display, receive said input data from the user via said input mechanism, compare said input data to said passing data set, and assign either of a selected test performance-pass or a test performance-fail signal to said user depending upon the result of said comparison;

a remote access control means in electromechanical communication with either a machine, a work area or an item, for receiving said portable data storage device and either allowing the user to access or preventing the user from accessing the machine, work area or item based upon said test performance signal.

2. The system of claim **1**, wherein said assignment of said selected signal is dependent upon a baseline level assigned to the user and received by said microprocessor from said portable data storage device.

3. The system of claim **1**, wherein said input mechanism comprises a binary input signal selection apparatus.

4. The system of claim **1**, wherein said alertness test comprises a set of questions and said passing data set comprises a set of answers to said set of questions.

5. The system of claim **4**, wherein said set of questions is graphic-based.

6. The system of claim **1**, wherein said input mechanism is integral with said visual display mechanism.