Automated Medication Dispensing System  
(WKT3-13)  
LU Shuhao  
Prof. Kam Tim Woo

**BACKGROUND**
The shortage of medical resource in Hong Kong has already become a serious problem that causes public concerns. Due to the insufficient medical resource, most public hospitals have to suffer the heavy workload and the patients consequently receive the worst treatments. One of solutions to relieve this pressure is that take advantage of medical automation. With the help of the robots, the repeated and tiring work can be easily completed, so that eventually cut down the demands on medical professionals and improve the efficiency.

**OVERVIEW**
This project aims to develop a one-stop medical machinery, Med-Care Box, which includes medication dispensing, packaging and administration. With the help of automation technology, our automated medication dispensing system will help the pharmaceutical industry eliminate the opportunity for medication errors and reduce their labor cost in pharmacy industry. A prototype implementing software, electronic control and a mechanism structure will be designed, built and tested.

**WORKFLOW**
The user firstly inputs the patients' confidential ID (barcode), selects the profiles from a computer and checks the appropriate medication to be administered. The system then will dispense the specific doses from cabinets automatically. Normally, in the pharmacy industry, medicines are expected to dispense in four times a day, seven days a week for patients as standard. Therefore, the dispensed medication will be packed in a tray, which contains 4 x 7 cells. Additionally, all the medicinal products need to be stored in a certain environment, which is maintained by closed loop control.

**BLOCK DIAGRAM**
The users are able to input patients' profiles (usually a barcode) to the computer. After comparison with the database, the computer will command the building circuits. The building circuits mainly take charge of three sub-systems. The HVAC (heating, ventilation, and air conditioning) control system ensures the storage environment is maintained to guarantee the quality of the medicinal products. The executive Motion System controls the dispensing of medicines. At the same time, the monitoring system is responsible for observing that the correct medicines are dispensed in the right places.