# Report For Ansys

**Name:Wayne**

**Platform: Ubuntu 16.04**

**IDE: Eclipse for C++**

**C++ Version: C++ 11**

**Part1.Pre-condition.**

Firstly, I am confused with the input of this program.

For example, if the variable amountPaid is 30$, there are many different combinations, such as 10$,10$,10$ or 20$ 10$ or 20$,5$,5$, the combination of the input will affect the number of coins in the till.

However, in the real life, salesperson usually return the difference for one specific banknote. **So I assume the customer always pay with one coin/bill.**

The other problem is that we don’t know the number of coins in till when initialization. So, **I assume the initialized number is 10 for every coins.**

**Part2.Algorithm**

I applied the greedy algorithm to solve the problem. The algorithm will select the biggest one in till if the biggest one exist. There are several test cases:

Case1:

Paid 100$ Own 50$ change 50$

The coins in till: <100$,0><50$, 1> <20$, 2> <10$, 2>

The output: 1 50$

The till will change: <100$,1> <50$, 0> <20$,2><10$,2>

Case2:

Paid 100$, Own 50$, Change 50$

The coins in till: <100$,1> <50$, 0> <20$,2><10$,2>

The output: 2 20$, 1 10$

The till will change: <100$,2> <50$, 0> <20$,0><10$,1>

Case3: the total money are not enough.

Paid 100$, Own 50$, Change 50$

The coins in till: <100$,0> <50$, 0> <20$,0><10$,1>

Out:the money is not enough

Case4:The total money is enough but there is no suitable coins.

Paid 100$, Own 50$, Change 50$

The coins in till: <100$,1> <50$, 0> <20$,1><10$,1>

Output:money is enough but coins/bills are not enough

**Part3, Improvement**

I don’t know the combination of the payment, so I assume customer just can only use one coin/bill to pay.

if customer wants to make payment become random, just remove related code.

**Part4:result**

