

Vending machine

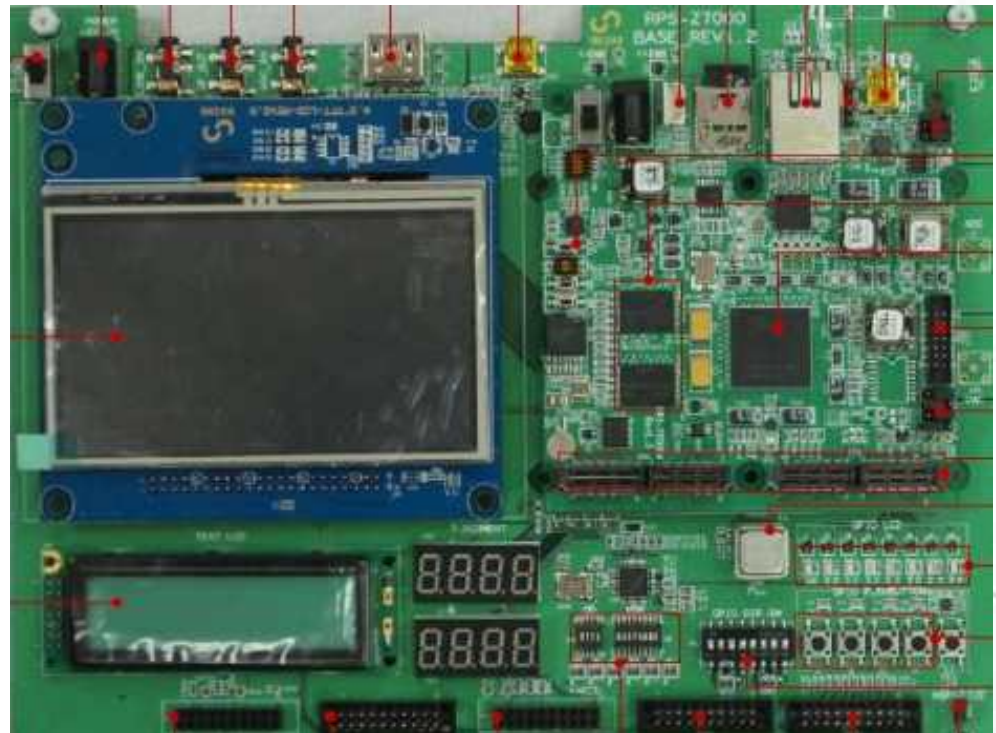
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기능

- Insert coin(1000원, 100원)
- Buy(커피, 콜라)
- Sold Out
- Return
- Manager mode

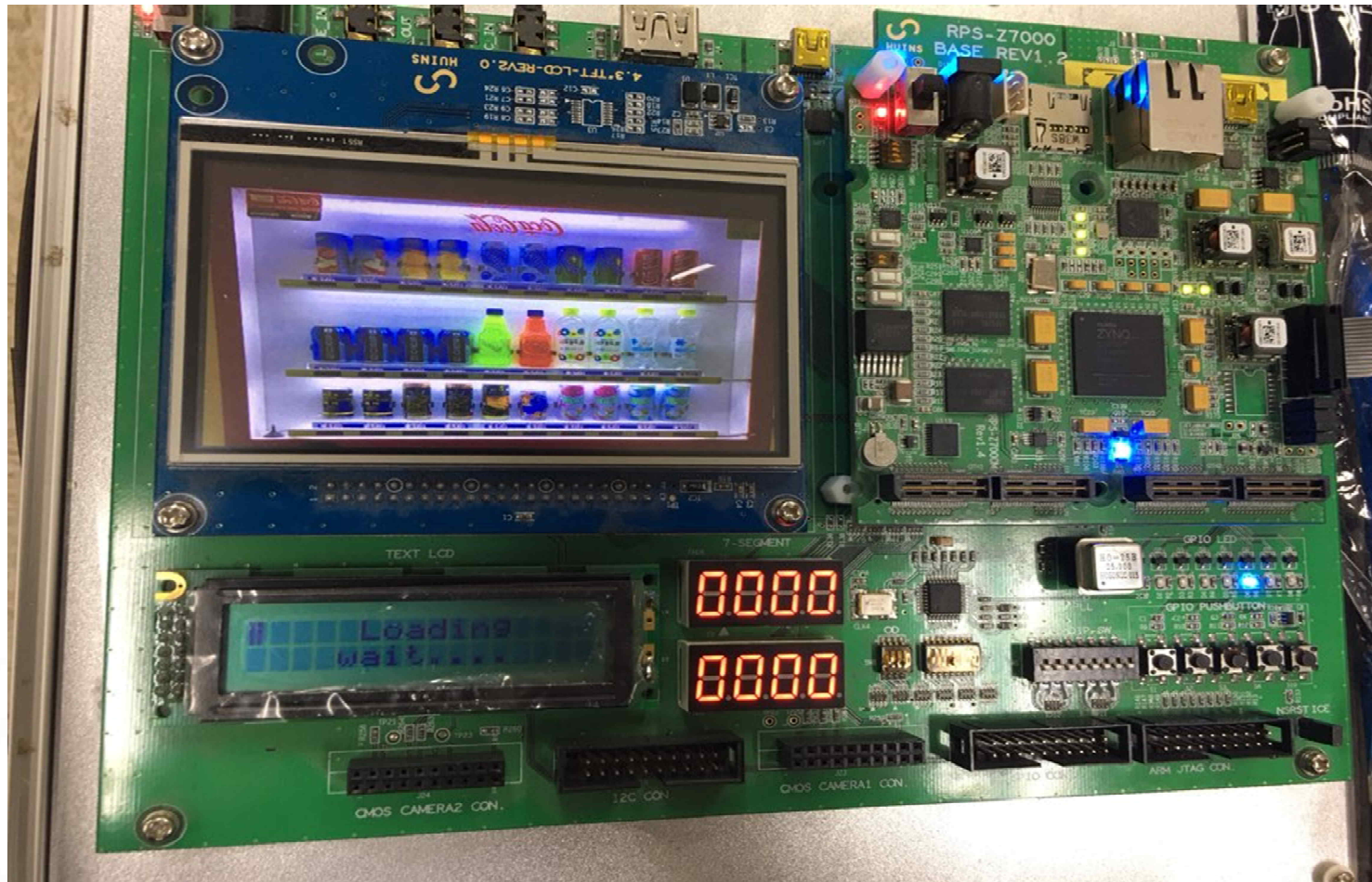


버튼 기능



- 1. 커피 구매
- 2. 콜라 구매
- 3. 관리자모드 (start)
- 4. 관리자모드 (상품 선택)
- 5. 관리자 모드 (재고 증가)
- 6. 반환 버튼
- 7. 1000원 투입
- 8. 100원 투입

Loading



Loading

```
void loading()
{
    char up_line[16];
    char down_line[16];

    sprintf(up_line, "    Loading    ");
    sprintf(down_line, "    wait....    ");
    textlcd(up_line, down_line);
    int z;
    for(z = 0; z < 8; z++)
    {
        *led_ctrl_base = 0x0001;
        *led_ctrl_base = *led_ctrl_base << z;
        usleep(500000);
    }
    *led_ctrl_base = 0x00FF;
    *sevensseg_ctrl_base = 0x88888888;
    usleep(500000);
    *led_ctrl_base = 0x0000;
    *sevensseg_ctrl_base = 0x00000000;
}
```

Initial setting

```
while(1)
{
    *tftlcd_ctrl_base = 0x1;
    *(tftlcd_ctrl_base+1) = 0x1;

    sprintf(up_line,"insert more coin");
    sprintf(down_line,"");
    textlcd(up_line, down_line);

    for (y=0; y<272; y++)
    {
        for( x=0; x<240; x++)
        {
            *(BRAM+y*240+x) = vending[x*2 + 1 + y*480]<<16 | vending[x*2 + y*480];
        }
    }
}
```


Sold Out



Sold Out

```
if(coffee < 1 && coke > 0)
{
    sprintf(up_line,"    coffee    ");
    sprintf(down_line,"    sold out    ");
    textlcd(up_line, down_line);

    for (y=0; y<272; y++)
    {
        for( x=0; x<240; x++)
        {
            *(BRAM+y*240+x) = coffee_max[x*2 + 1 + y*480]<<16 | coffee_max[x*2 + y*480];
        }
    }
}
```

Sold Out

```
if(coke < 1 && coffee > 0)
{
    sprintf(up_line,"    coke    ");
    sprintf(down_line,"    sold out    ");
    textlcd(up_line, down_line);

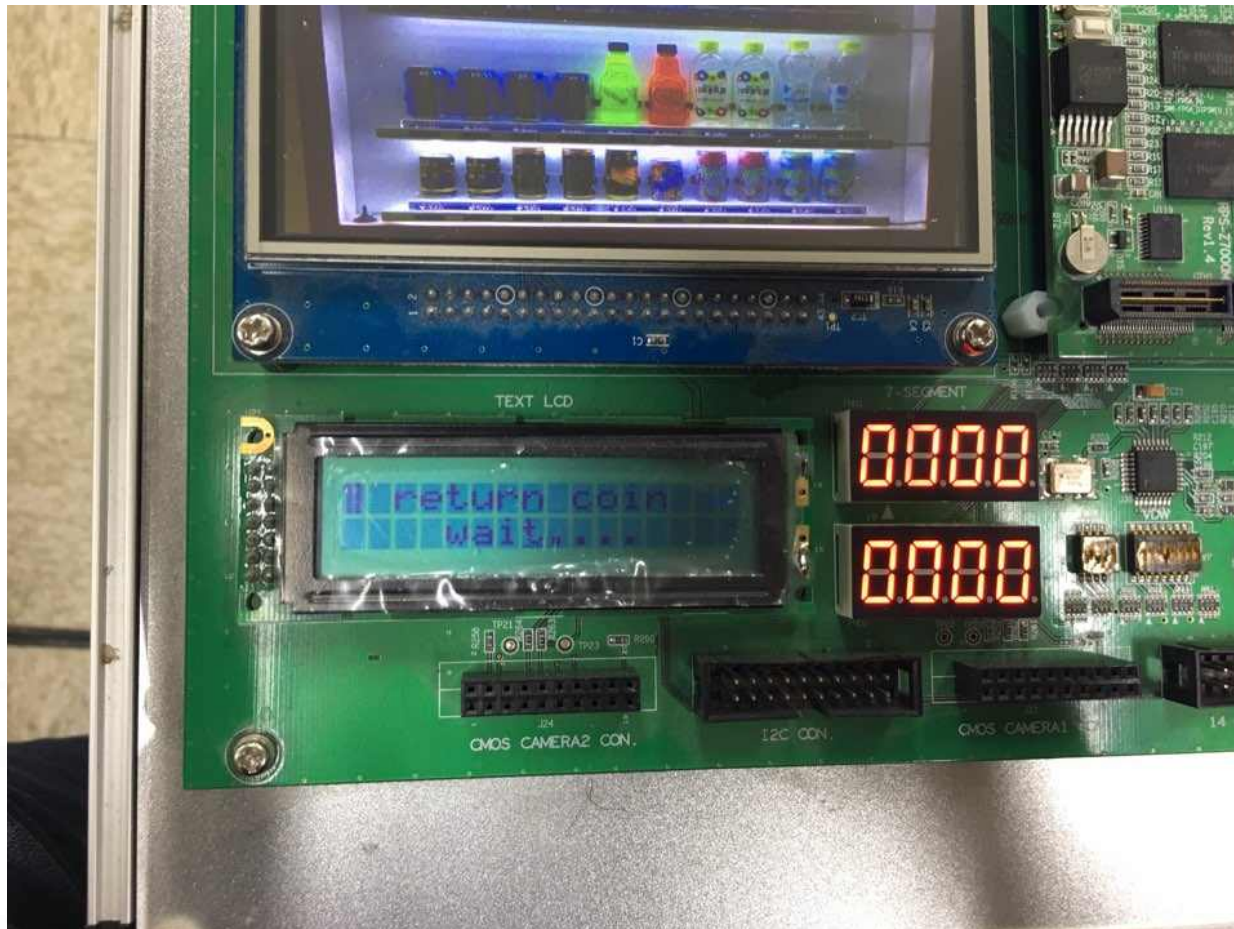
    for (y=0; y<272; y++)
    {
        for( x=0; x<240; x++)
        {
            *(BRAM+y*240+x) = coke_max[x*2 + 1 + y*480]<<16 | coke_max[x*2 + y*480];
        }
    }
}
```

Sold Out

```
if(coke < 1 && coffee < 1)
{
    sprintf(up_line,"    all    ");
    sprintf(down_line,"    sold out    ");
    textlcd(up_line, down_line);

    for (y=0; y<272; y++)
    {
        for( x=0; x<240; x++)
        {
            *(BRAM+y*240+x) = sold_out[x*2 + 1 + y*480]<<16 | sold_out[x*2 + y*480];
        }
    }
}
```

반환



반환

```
else if(*sw_ctrl_base == 0x00DF)
{
    sprintf(up_line, "  return coin  ");
    sprintf(down_line, "    wait....  ");
    textlcd(up_line, down_line);
    while(*sevensseg_ctrl_base >= 0x01000000)
    {
        if((*sevensseg_ctrl_base & 0x0F000000) < 0x01000000 )
        {
            *sevensseg_ctrl_base = *sevensseg_ctrl_base - 0x10000000;
            *sevensseg_ctrl_base += 0x09000000;
        }
        *sevensseg_ctrl_base -= 0x01000000;
        usleep(100000);
    }
}
```

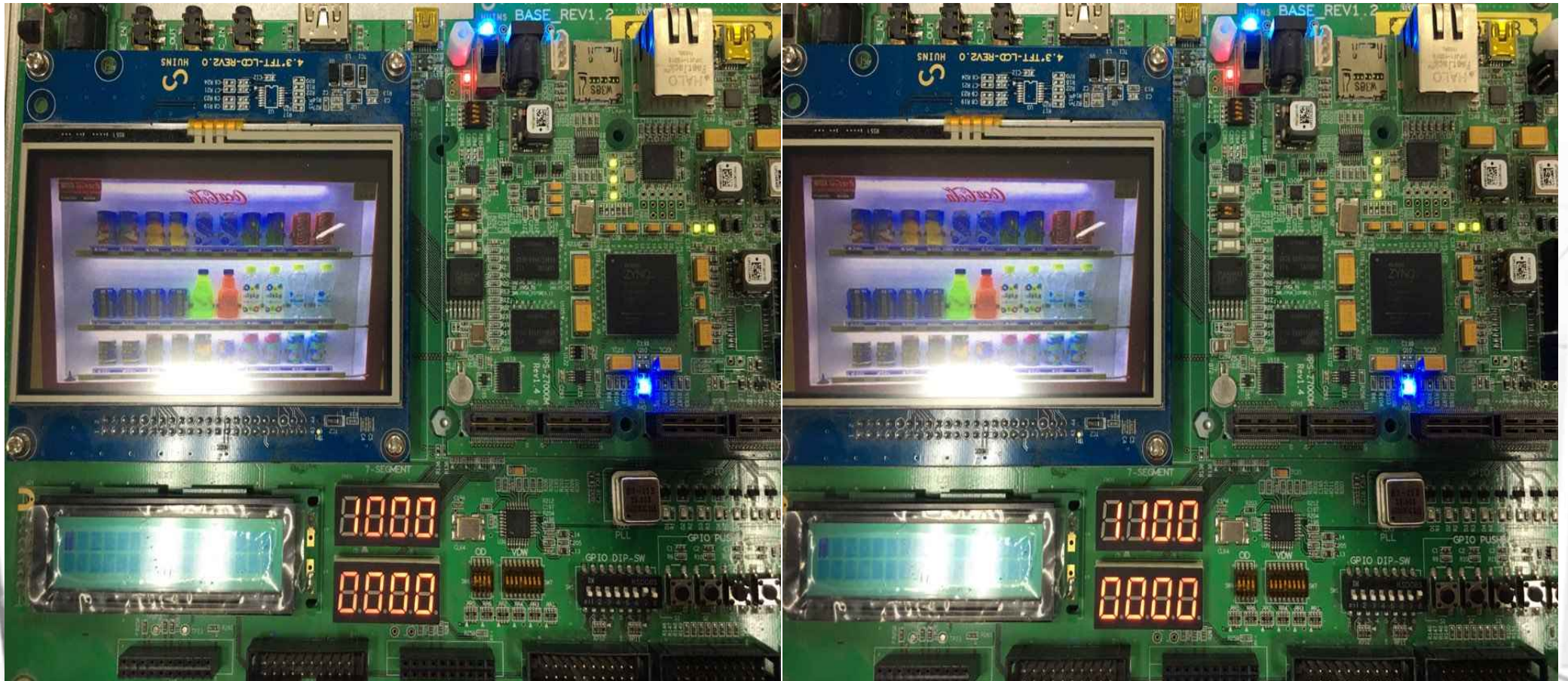
금액 (1000원, 100원)



금액 (1000원, 100원)

```
if(*sevensseg_ctrl_base > 0x98000000)
{
    *sevensseg_ctrl_base = 0x99000000;
    sprintf(up_line," no more coin ");
    sprintf(down_line," full coin ");
    textlcd(up_line, down_line);
}
```

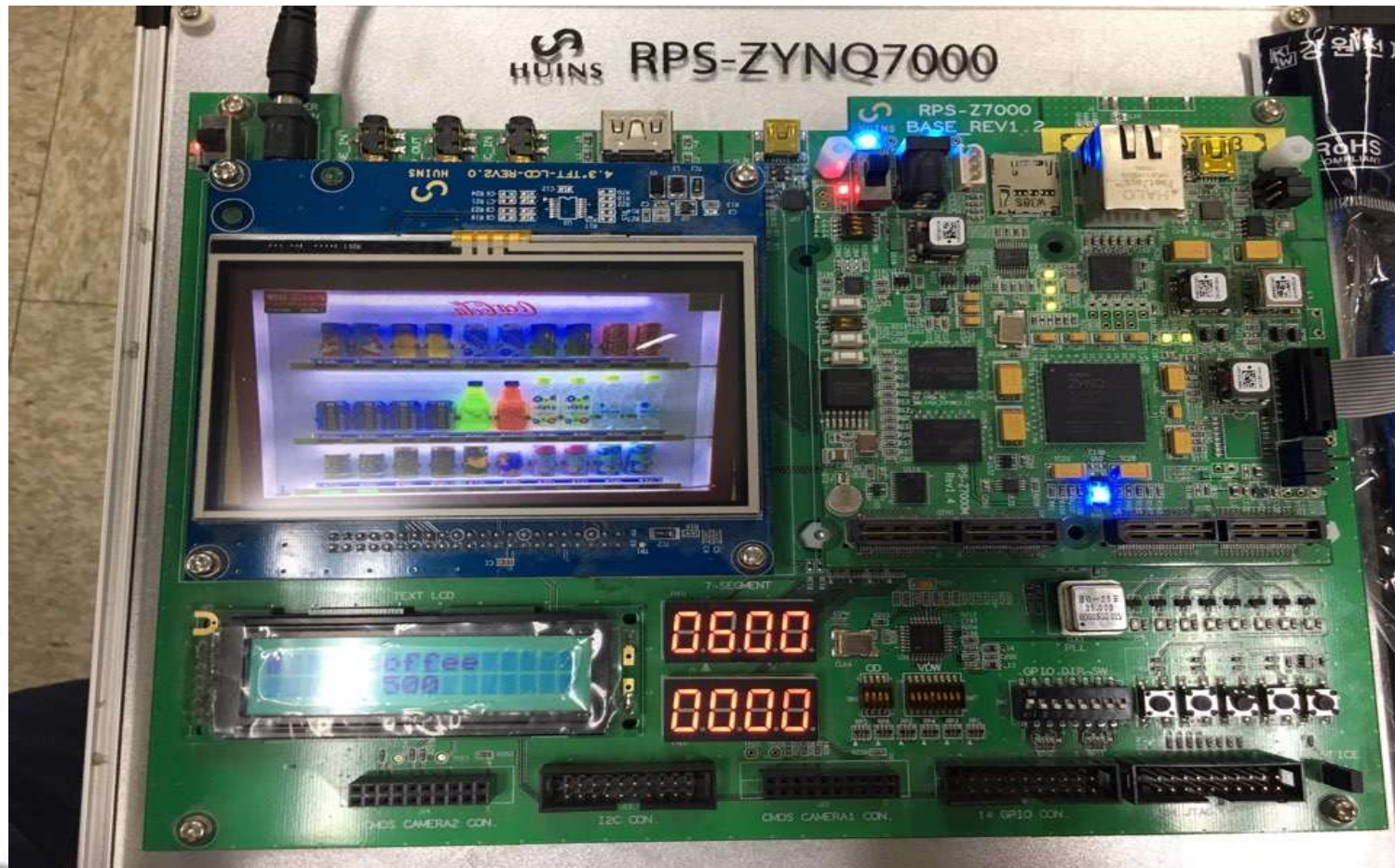

금액 (1000원, 100원)



금액 (1000원, 100원)

```
else if(*sw_ctrl_base == 0x00BF)
{
    *sevensseg_ctrl_base += 0x10000000;
    if((*sevensseg_ctrl_base & 0xF0000000) == 0xA0000000)
    {
        *sevensseg_ctrl_base = *sevensseg_ctrl_base - 0x10000000;
    }
    while(*sw_ctrl_base == 0x00BF);
    sleep(1);
}
else if(*sw_ctrl_base == 0x007F)
{
    *sevensseg_ctrl_base += 0x01000000;
    if((*sevensseg_ctrl_base & 0x0F000000) == 0x0A000000)
    {
        *sevensseg_ctrl_base = *sevensseg_ctrl_base & 0xF0FFFFFF;
        *sevensseg_ctrl_base += 0x10000000;
        if(*sevensseg_ctrl_base > 0x99000000) *sevensseg_ctrl_base = 0x99000000;
    }
    while(*sw_ctrl_base == 0x007F);
    sleep(1);
}
```

상품구매 (커피)



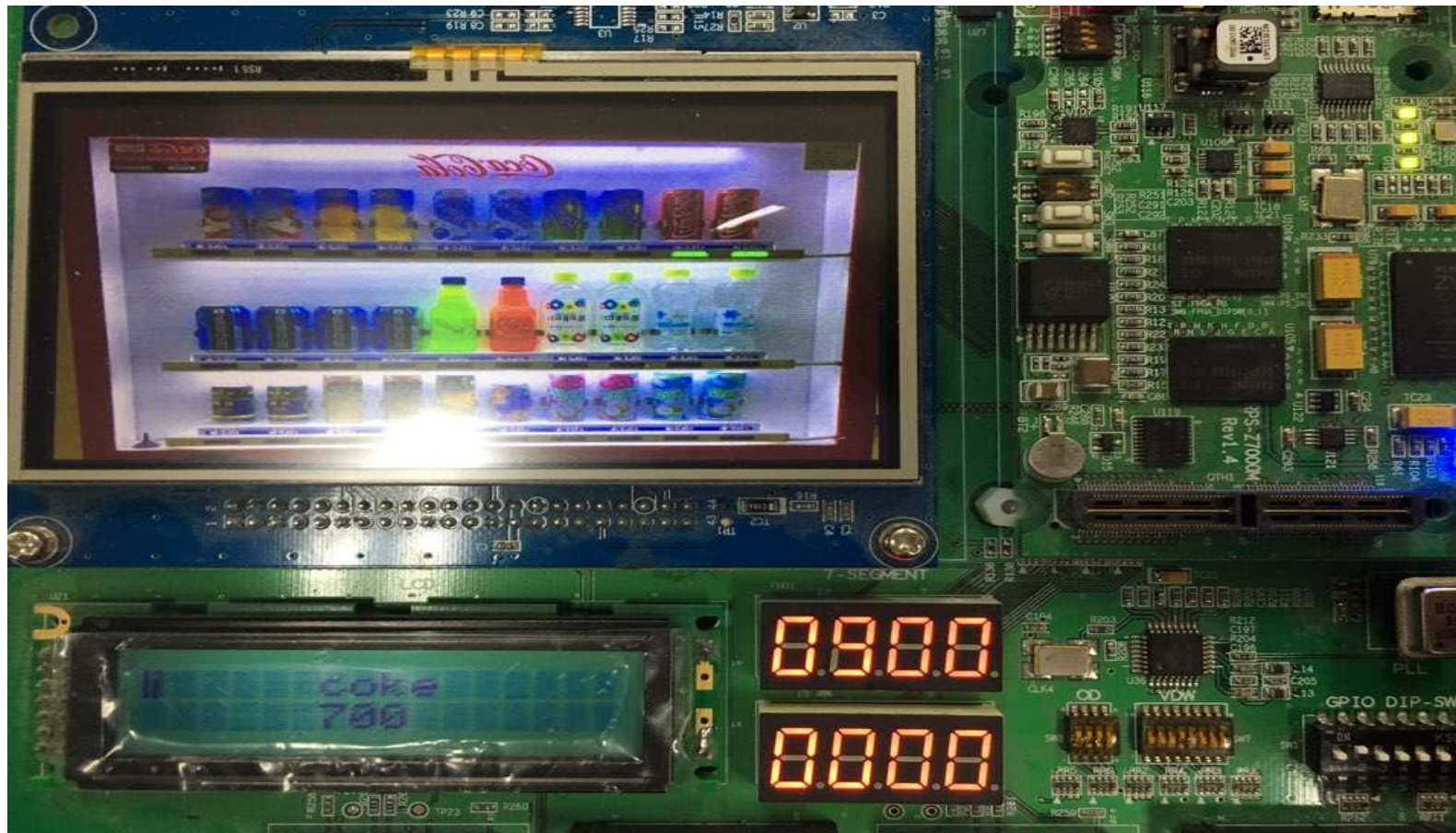
상품구매 (커피)

```
if(*sw_ctrl_base == 0x00FE && *sevensseg_ctrl_base >= 0x05000000 && coffee > 0)
{
    for (y=0; y<272; y++)
    {
        for( x=0; x<240; x++)
        {
            *(BRAM+y*240+x) = coffee_buy[x*2 + 1 + y*480]<<16 | coffee_buy[x*2 + y*480];
        }
    }
    sprintf(up_line, "      coffee      ");
    sprintf(down_line, "      500      ");
    textlcd(up_line, down_line);
    if((*sevensseg_ctrl_base & 0x0F000000) < 0x05000000 )
    {
        *sevensseg_ctrl_base = *sevensseg_ctrl_base - 0x10000000;
        *sevensseg_ctrl_base += 0x0A000000;
    }
    *sevensseg_ctrl_base -= 0x05000000;
    while(*sw_ctrl_base == 0x00FE);
    sleep(1);
    coffee--;
}
```

상품구매 (커피)

```
else if(*sw_ctrl_base == 0x00FE && *sevensseg_ctrl_base == 0x00000000)
{
    for (y=0; y<272; y++)
    {
        for( x=0; x<240; x++)
        {
            *(BRAM+y*240+x) = coffee_buy[x*2 + 1 + y*480]<<16 | coffee_buy[x*2 + y*480];
        }
    }
    *sevensseg_ctrl_base = 0x00000500;
    while(*sw_ctrl_base == 0x00FE);
    *sevensseg_ctrl_base = 0x00000000;
    sleep(1);
}
```


상품구매 (콜라)



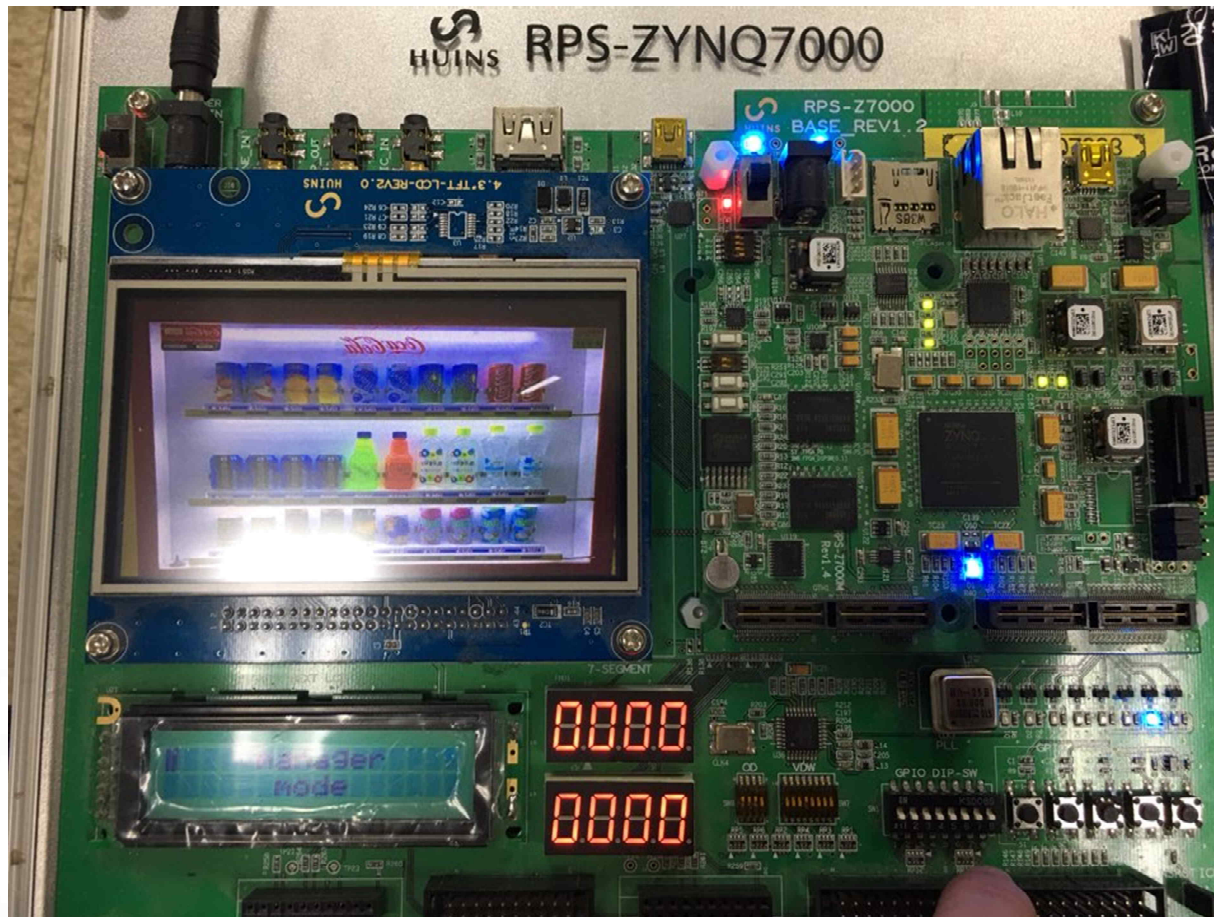
상품구매 (콜라)

```
else if(*sw_ctrl_base == 0x00FD && *sevensseg_ctrl_base >= 0x07000000 && coke > 0)
{
    for (y=0; y<272; y++)
    {
        for( x=0; x<240; x++)
        {
            *(BRAM+y*240+x) = coke_buy[x*2 + 1 + y*480]<<16 | coke_buy[x*2 + y*480];
        }
    }
    sprintf(up_line, "      coke      ");
    sprintf(down_line, "      700      ");
    textlcd(up_line, down_line);
    if((*sevensseg_ctrl_base & 0x0F000000) < 0x07000000 )
    {
        *sevensseg_ctrl_base = *sevensseg_ctrl_base - 0x10000000;
        *sevensseg_ctrl_base += 0x0A000000;
    }
    *sevensseg_ctrl_base -= 0x07000000;
    while(*sw_ctrl_base == 0x00FD);
    sleep(1);
    coke--;
}
```

상품구매 (콜라)

```
else if(*sw_ctrl_base == 0x00FD && *sevensseg_ctrl_base == 0x00000000)
{
    for (y=0; y<272; y++)
    {
        for( x=0; x<240; x++)
        {
            *(BRAM+y*240+x) = coke_buy[x*2 + 1 + y*480]<<16 | coke_buy[x*2 + y*480];
        }
    }
    *sevensseg_ctrl_base = 0x00000700;
    while(*sw_ctrl_base == 0x00FD);
    *sevensseg_ctrl_base = 0x00000000;
    sleep(1);
}
```


관리자 모드



관리자모드

```
else if(*sw_ctrl_base == 0x00FB)
{
    while(*sw_ctrl_base == 0x00FB)
    {
        manager(&coffee, &coke);
    }
    loding();
}
```

관리자모드

```
void manager(int *max1, int *max2)
{
    int num;
    char up_line[16];
    char down_line[16];

    sprintf(up_line, "      manager      ");
    sprintf(down_line, "      mode      ");
    textlcd(up_line, down_line);

    *led_ctrl_base = 0x00FF;
    *sevensseg_ctrl_base = 0x88888888;
    usleep(500000);
    *led_ctrl_base = 0x0000;
    *sevensseg_ctrl_base = 0x00000000;
```

관리자모드 (수량확인)



관리자모드

```
while(*sw_ctrl_base == 0x007B || *sw_ctrl_base == 0x0073 || *sw_ctrl_base == 0x006B || *sw_ctrl_base == 0x006A)
{
    num = (*max1 << 16) + *max2;
    *sevensseg_ctrl_base = num;

    if(*sw_ctrl_base == 0x007B)
    {
        sprintf(up_line, "    coffee << ");
        sprintf(down_line, "    coke    ");
        textlcd(up_line, down_line);
        *led_ctrl_base = *max1;
    }
    else if(*sw_ctrl_base == 0x0073) //01110011
    {
        sprintf(up_line, "    coffee    ");
        sprintf(down_line, "    coke << ");
        textlcd(up_line, down_line);
        *led_ctrl_base = *max2;
    }
}
```


관리자모드

```
else if(*sw_ctrl_base == 0x006B)           //01101011 coffee_max up
{
    *max1= *max1+1;
    *sevensseg_ctrl_base += 0x00010000;
    if((*sevensseg_ctrl_base & 0x000F0000) == 0x000A0000)
    {
        *sevensseg_ctrl_base = *sevensseg_ctrl_base & 0xFFFF0FFF;
        *sevensseg_ctrl_base += 0x00100000;
    }
    while(*sw_ctrl_base == 0x006B);
    sleep(1);
}
```

문제점 및 해결

- 버튼을 올렸을 시 돈이 계속 추가 되는 문제
-> while()문을 이용한 무한루프로 해결
- 세그먼트가 10진수가 아닌 16진수로 올라가는 문제
-> 해결
- 9900원 이상일 때도 값이 계속 올라가는 문제
-> 9900원 이상 올라갈 때 9900원으로 고정 시켜서 안 올라가게 함



Thank you