Assignment 3

1. What's difference among const, constexpr and #define? How to distinguish top-level const from low-level const?
2. Summarize various means of function parameter passing, and explain how to select the parameter passing method.
3. Find all the errors and correct them by refer to the line number in the following program.

```
1   int &f1(int x=0,int y)
2   {
3       return x*y;
4   }
5   int *f2(int a; int b=1)
6   {
7       int t=a*b;
8       return &t;
9   }
10  int main()
11  {
12      const r;
13      int &a,*p;
14      r=10;
15      a=r;
16      const char *pc1="John";
17      char *const pc2=" John ";
18      char const *pc3=" John ";
19      const char const*pc4="dukang";
20      pc1[2]='t';
21      pc2[2]='t';
22      pc3[2]='t';
23      pc4[2]='t';
24      cout<<f1(3);
25      cout<<f2(2,3);
26      return 0;
27  }
```

4. Read the following program and determine the output.

1)

```
#include<iostream>
using namespace std;
double f(int a=10,int b=20,int c=5) {return a*b*c;}

int main( ){
    cout<<f( )<<endl<<f(20)<<endl<<f(10,10)<<endl<<f(10,10,10)<<endl;
```

```
        return 0;
    }
```

2)

```
    #include<iostream>
    using namespace std;
    int &f(int& a,int b=20){
         a=a*b;
         return a;
    }
    int main(){
        int j=10;
        int &m=f(j);
        int *p=&m;
        cout<<j<<endl;
        m=20;
        cout<<j<<endl;
        f(j,5);
        cout<<j<<endl;
        *p=300;
        cout<<j<<endl;
        return 0;
    }
```

3)

```
    #include <iostream>
    #include <memory>
    using namespace std;

    struct Node{
        int data;
        shared_ptr<Node> next;
    };

    int main(){
        int a[]={3,4,1,8,9,2,7};
        shared_ptr<Node> list(new Node),p;
        list->data=0;
        p=list;
        for(auto v:a){
            shared_ptr<Node> q(new Node);
            q->data=v;
            p->next=q;
            p=p->next;
```

```
        }
        p->next=NULL;
        p=list->next;
        int s=0;
        while(p){
                cout << p->data << "\t";
                s+=p->data;
                p=p->next;
        }
        cout << "\ns=" << s << endl;
        return 0;
}
```

5. Design and complete the first edition of Family Convenience Store.

```
**********************************
Family Convenience Store
**********************************
(1)     Bread   1.00
(2)     Cocacola        2.50
(3)     Beer    10.0
(4)     Chocalate       2.50
(0)     EXIT
--------------------------------
PLEASE SELECT A NUMBER:
```

Input: 1(almost the same with 2, 3 or 4)

```
**********************************
Family Convenience Store
**********************************
(1)     Bread   1.00
(2)     Cocacola        2.50
(3)     Beer    10.0
(4)     Chocalate       2.50
(0)     EXIT
--------------------------------
PLEASE SELECT A NUMBER:
1
THANK YOU!
YOU HAVE SELECTED:      [Bread] 1.00
----------------
GOOD BYE!
[PRESS ENTER TO EXIT...]
```

Input: 0

```
**********************************
Family Convenience Store
**********************************
(1)     Bread   1.00
(2)     Cocacola        2.50
(3)     Beer    10.0
(4)     Chocalate       2.50
(0)     EXIT
------------------------------
PLEASE SELECT A NUMBER:
0
----------------
GOOD BYE!
[PRESS ENTER TO EXIT...]
```

- Note:
  For the assignment, write all your answer in the word document and save it with the name of "StudentID_Name_3.pdf". (The StudentID should be your full student ID such as 22023337621003_叶子绿_3.pdf) and for the convenient store, save the source code with the name StudentID_Name_convenient store and finally compress with the pdf above as the name "StudentID_Name_3.rar".
- Submit your assignment before the end of next Monday(March 18) to the superstar platform!