2016年

2019年11月20日 2:38

数据结构与算法

一.

1. D
2. C
3. C
4. D
5. A
6. D
7. C
8. A
9. C
10. C

二.

1.

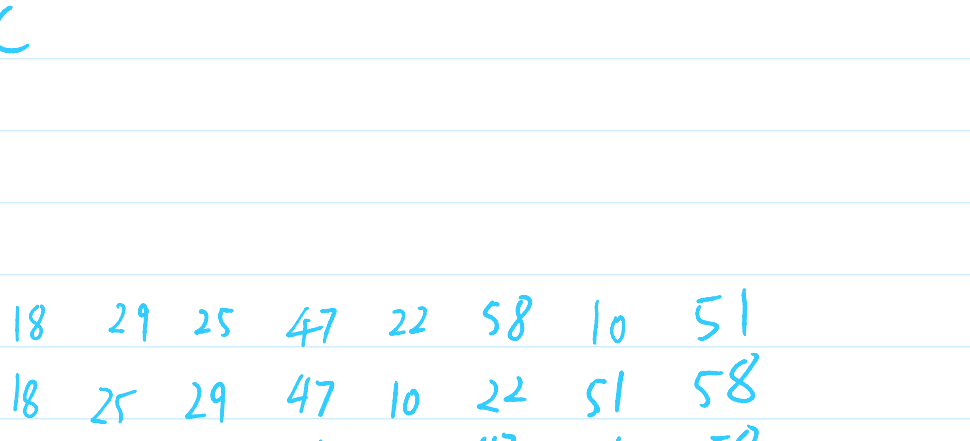
第一次: 18 29 25 47 22 58 10 51
第二次: 18 25 29 47 10 22 51 58
第三次: 10 18 22 25 29 47 51 58

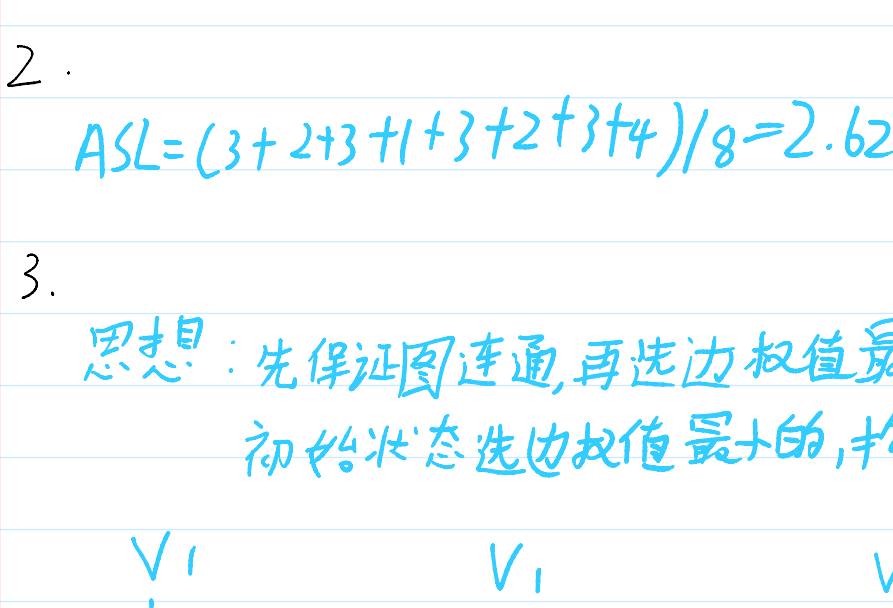
2.

$ASL=(3+2+3+1+3+2+3+4)/8=2.625$

3.

思想：先保证图连通，再选边权值最小的
初始状态选边权值最大的，构成回路拆去





二、

1.

```
#include<iostream>
#include<queue>
#include<stdlib.h>
using namespace std;

struct BTnode
{
	int data;
	BTnode *left;
	BTnode *right;
};

void LevelOrder(BTnode *a)
{
	queue <BTnode*>q;
	int count=0;
	if(a)
	{
		q.push(a);
		while(!q.empty())
		{
			BTnode *tem=q.front();
			q.pop();
			cout<<tem->data;
			if(tem->left)
				q.push(tem->left);
			if(tem->right)
				q.push(tem->right);
		}
	}
}

int main()
{
	/*
	BTnode *node6=(BTnode*)malloc(sizeof(BTnode));	node6->left=NULL;	node6->
	right=NULL;	node6->data=6;
	BTnode *node5=(BTnode*)malloc(sizeof(BTnode));	node5->left=NULL;	node5->
	right=NULL;	node5->data=5;
	BTnode *node4=(BTnode*)malloc(sizeof(BTnode));	node4->left=NULL;	node4->
	right=NULL;	node4->data=4;
	BTnode *node3=(BTnode*)malloc(sizeof(BTnode));	node3->left=NULL;	node3->
	right=node6;	node3->data=3;
	BTnode *node2=(BTnode*)malloc(sizeof(BTnode));	node2->left=node4;	node2->
	right=node5;	node2->data=2;
	BTnode *node1=(BTnode*)malloc(sizeof(BTnode));	node1->left=node2;	node1->
	right=node3;	node1->data=1;
	*/
	/*
	BTnode *node5=(BTnode*)malloc(sizeof(BTnode));	node5->left=NULL;	node5->
	right=NULL;	node5->data=5;
	BTnode *node4=(BTnode*)malloc(sizeof(BTnode));	node4->left=NULL;	node4->
	right=NULL;	node4->data=4;
	BTnode *node3=(BTnode*)malloc(sizeof(BTnode));	node3->left=NULL;	node3->
	right=NULL;	node3->data=3;
	BTnode *node2=(BTnode*)malloc(sizeof(BTnode));	node2->left=node4;	node2->
	right=node5;	node2->data=2;
	BTnode *node1=(BTnode*)malloc(sizeof(BTnode));	node1->left=node2;	node1->
	right=node3;	node1->data=1;
	*/
	BTnode *node7=(BTnode*)malloc(sizeof(BTnode));	node7->left=NULL;	node7->
	right=NULL;	node7->data=7;
	BTnode *node6=(BTnode*)malloc(sizeof(BTnode));	node6->left=NULL;	node6->
	right=NULL;	node6->data=6;
	BTnode *node5=(BTnode*)malloc(sizeof(BTnode));	node5->left=NULL;	node5->
	right=NULL;	node5->data=5;
	BTnode *node4=(BTnode*)malloc(sizeof(BTnode));	node4->left=node6;	node4->
	right=node7;	node4->data=4;
	BTnode *node3=(BTnode*)malloc(sizeof(BTnode));	node3->left=NULL;	node3->
	right=NULL;	node3->data=3;
	BTnode *node2=(BTnode*)malloc(sizeof(BTnode));	node2->left=node4;	node2->
	right=node5;	node2->data=2;
	BTnode *node1=(BTnode*)malloc(sizeof(BTnode));	node1->left=node2;	node1->
	right=node3;	node1->data=1;

	cout<<LevelOrder(node1);
}
```

2.

```
#include<iostream>
#include<stdlib.h>
using namespace std;

struct dnode
{
	int data;
	int feq;
	dnode *next;
	dnode *prev;
};

dnode* Create()
{
	int tem;
	dnode *head=(dnode*)malloc(sizeof(dnode));
	dnode *temNode1=head;
	dnode *temNode2,*temNode3;
	while(cin>>tem,tem!=-1)//输入-1结束
	{

		temNode1->data=tem;
		temNode1->feq=0;
		temNode2=(dnode*)malloc(sizeof(dnode));
		temNode3=temNode1;
		temNode1->next=temNode2;
		temNode2->prev=temNode1;
		temNode1=temNode2;
	}
	temNode3->next=head;
```

```
        head->prev=temNode3;
        return head;
}

void PrintList(dnode *a)
{
        dnode *head=a;
        while(a)
        {
                cout<<a->data<<" ";
                a=a->next;
                if(a==head)
                        break;
        }
        cout<<endl;
}

dnode* FeqSort(dnode *A)
{
        dnode *head=A;
        dnode *dnodes[1000];
        int n=0;
        while(A)
        {
                dnodes[n++]=A;
                A=A->next;
                if(A==head)
                        break;
        }

        for(int i=0;i!=n-1;i++)
        {
                int max=i;
                for(int j=1;j!=n;j++)
                {
                        if(dnodes[max]->feq<dnodes[j]->feq)
                                max=j;
                }
                dnode *tem=dnodes[i];
                dnodes[i]=dnodes[max];
                dnodes[max]=tem;
        }

        head=dnodes[0];
        for(int i=0;i!=n-1;i++)
        {
                dnodes[i]->next=dnodes[i+1];
                dnodes[i+1]->prev=dnodes[i];
        }
        head->prev=dnodes[n-1];
        dnodes[n-1]->next=head;

        return head;
}

int main()
{
        dnode *A=Create();
        PrintList(A);
        A=FeqSort(A);
        PrintList(A);
}
```

数据库部分

一、

1. B
2. D
3. C
4. C
5. A
6. A
7. b
8. B
9. C
10. D

二、

1. (1) $\Pi_{SPECIALITY}(\sigma_{ENAME='杨洋'}(E))$

(2) $\Pi_{E\#,ENAME}(\sigma_{SEX='女' \wedge CITY='上海'}(E \bowtie W \bowtie D))$

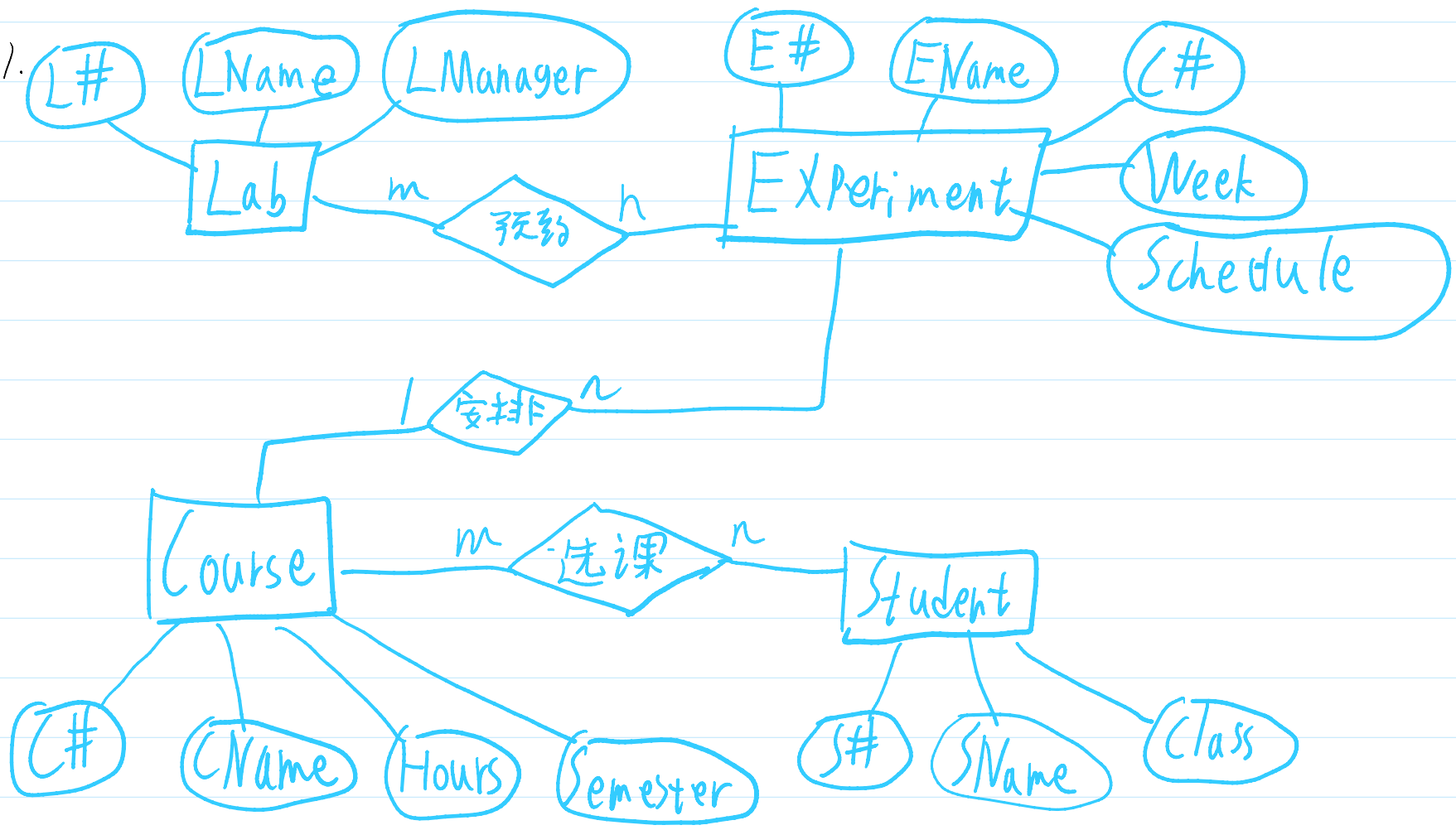
2. (1) Select E#, ENAME from E where

SPECIALITY='软件工程'

(2) Select E#, ENAME, SALARY, CITY from E,D,W where E.E#=W.E# And W.D#=D.D# And E.ENAME like '李%'

三.

1.



2.

学生(S# SName Class)

课程(C# CName Hours Semester)

实验(E#, EName, C#, Week, Schedule, C#)

实验室(L#, LName, LManager)

选课(S# C#)

预约(L#, E#)