LAPORAN PRAKTIKUM

SESI 3

PRAKTIKUM COMP6362 – DATA STRUCTURES

KELAS BE20

Oleh :

2440008600 – Andru Baskara Putra

SEMESTER GENAP 2020/2021

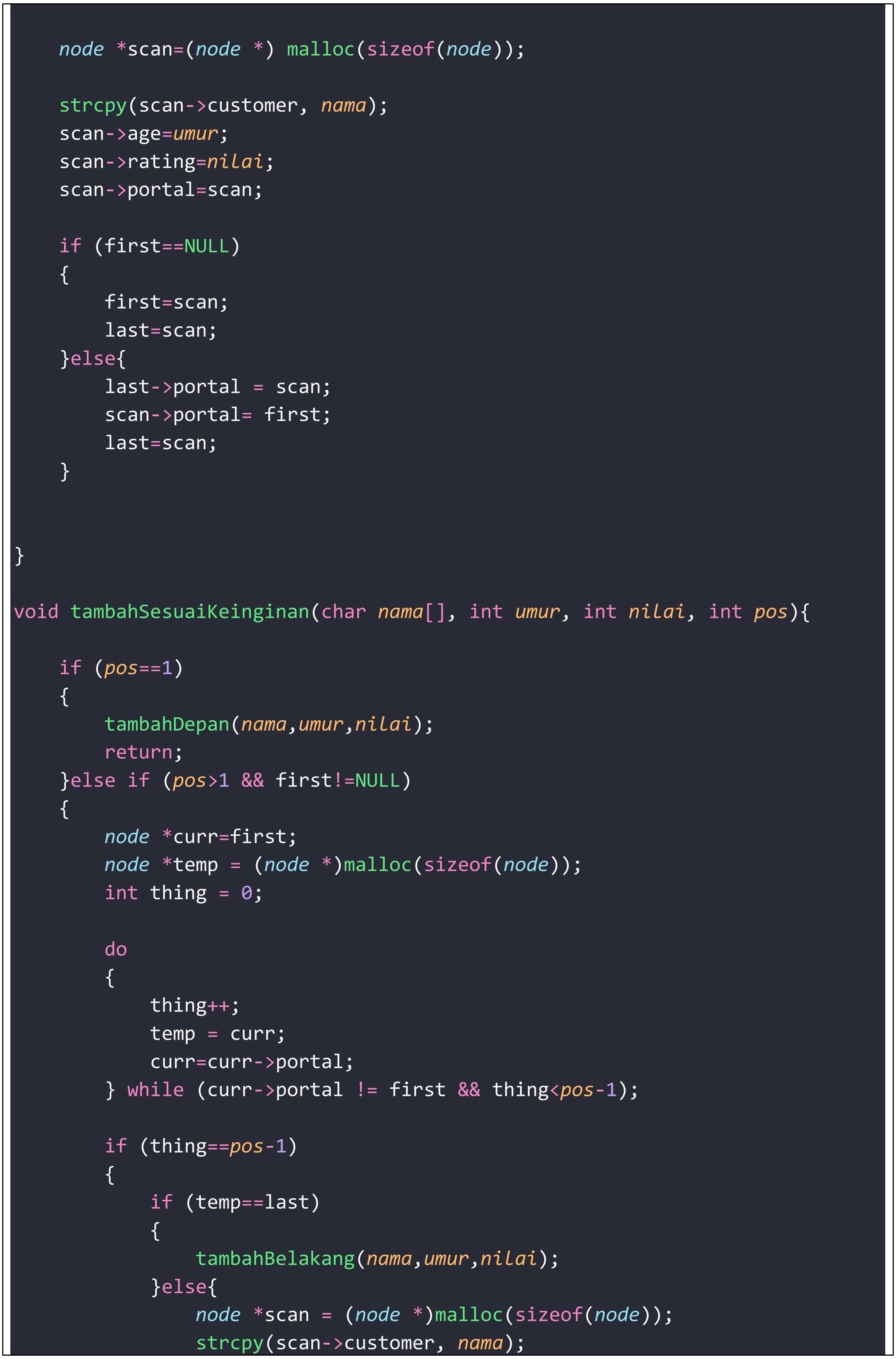
BINA NUSANTARA UNIVERSITY

MALANG

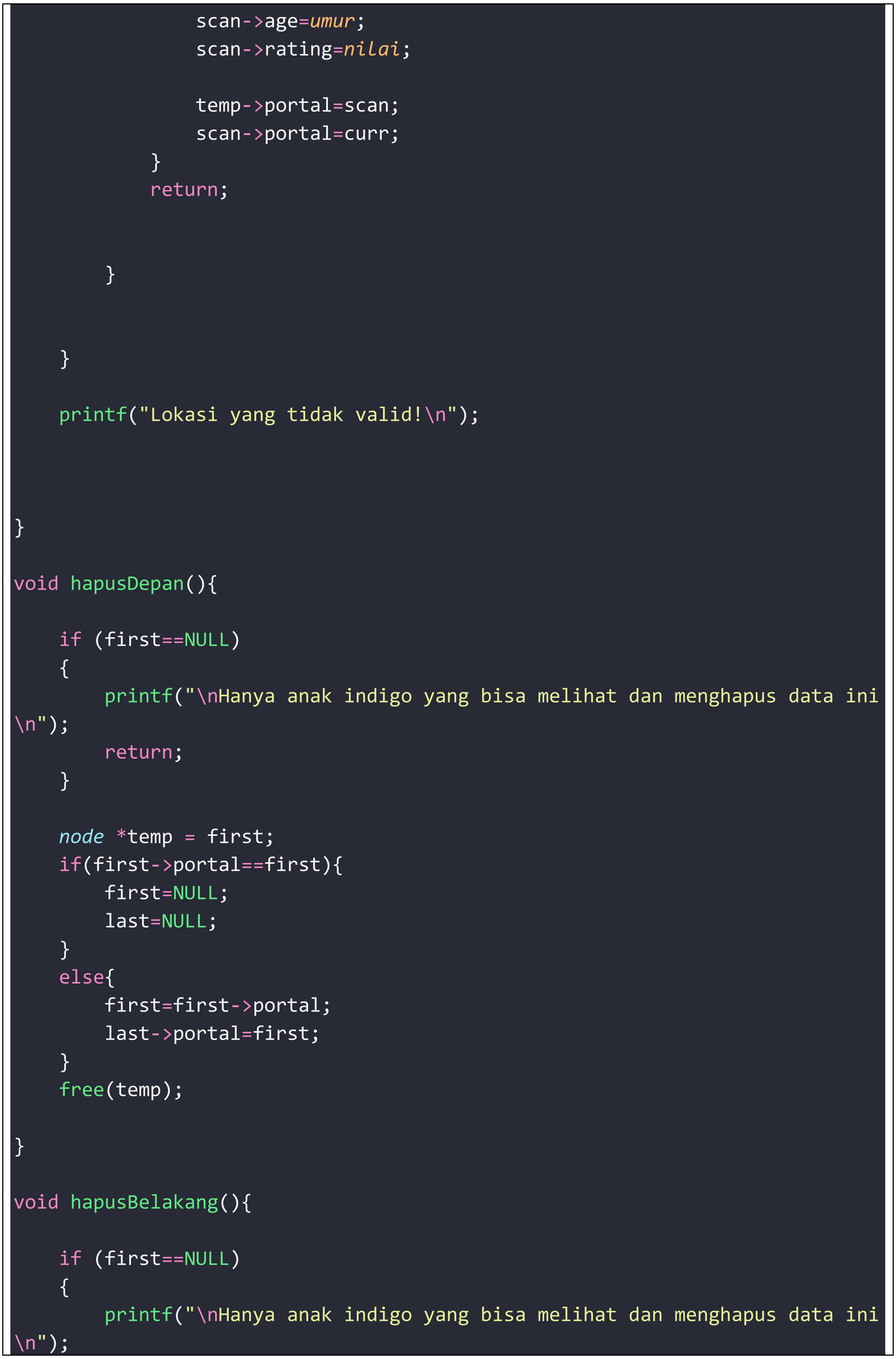
A. Kode Program

Source Code

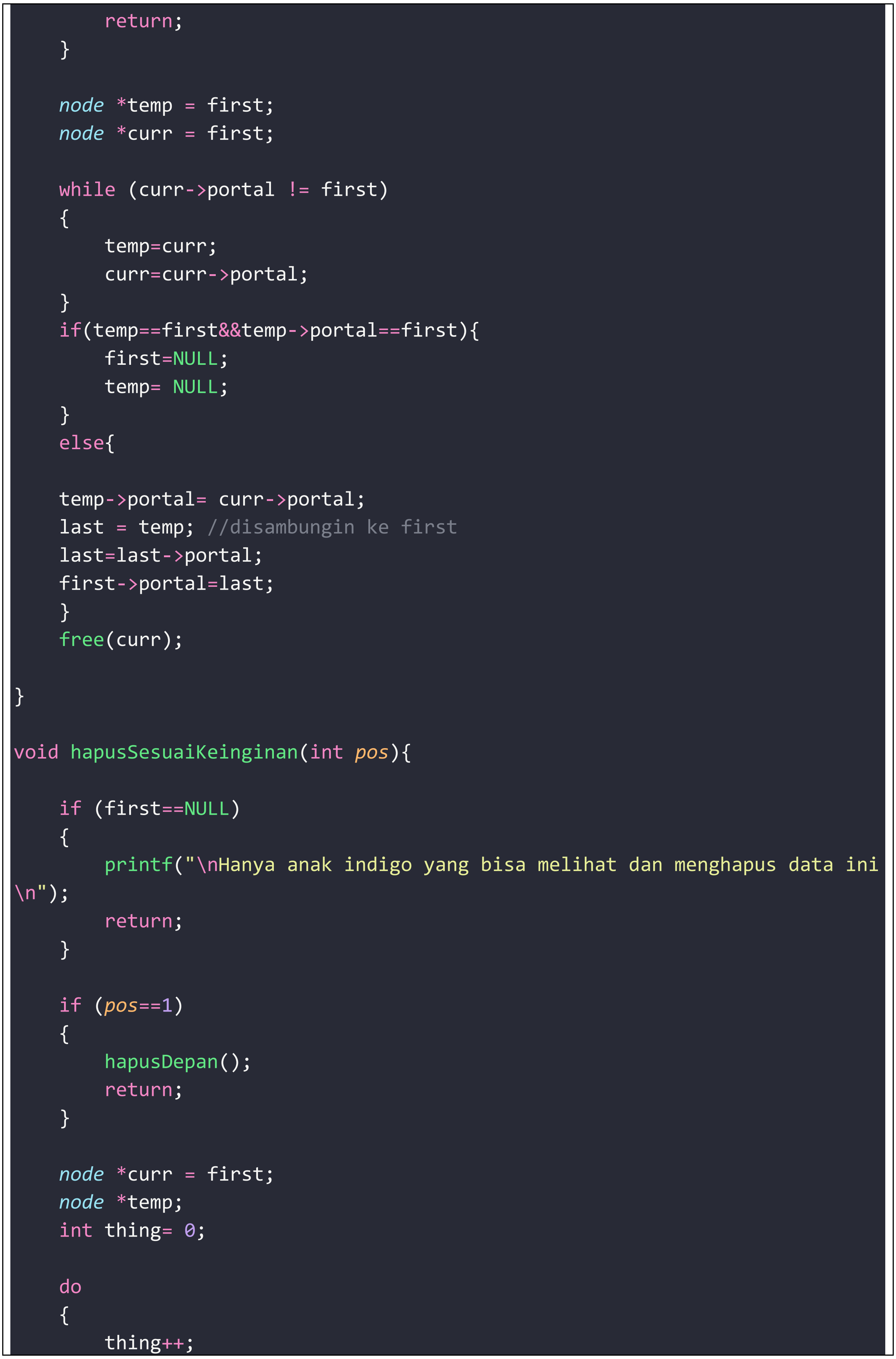
```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <malloc.h>

struct experimental
{
    int age;
    int rating;
    char customer[200];
    struct experimental* portal;
};

typedef struct experimental node;

node *first = NULL;
node *last =NULL;

void line(){
    printf("_______________________________________________\n");
}

void tambahDepan(char nama[], int umur, int nilai){
    node *scan = (node *)malloc(sizeof(node));

    strcpy(scan->customer, nama);
    scan->age=umur;
    scan->rating=nilai;
    scan->portal=scan;

    if (first==NULL)
    {
        first=scan;
        last=scan;
    }else{
        scan->portal=first;
        last->portal=scan;
        first=scan;
    }




}

void tambahBelakang(char nama[], int umur, int nilai){
```



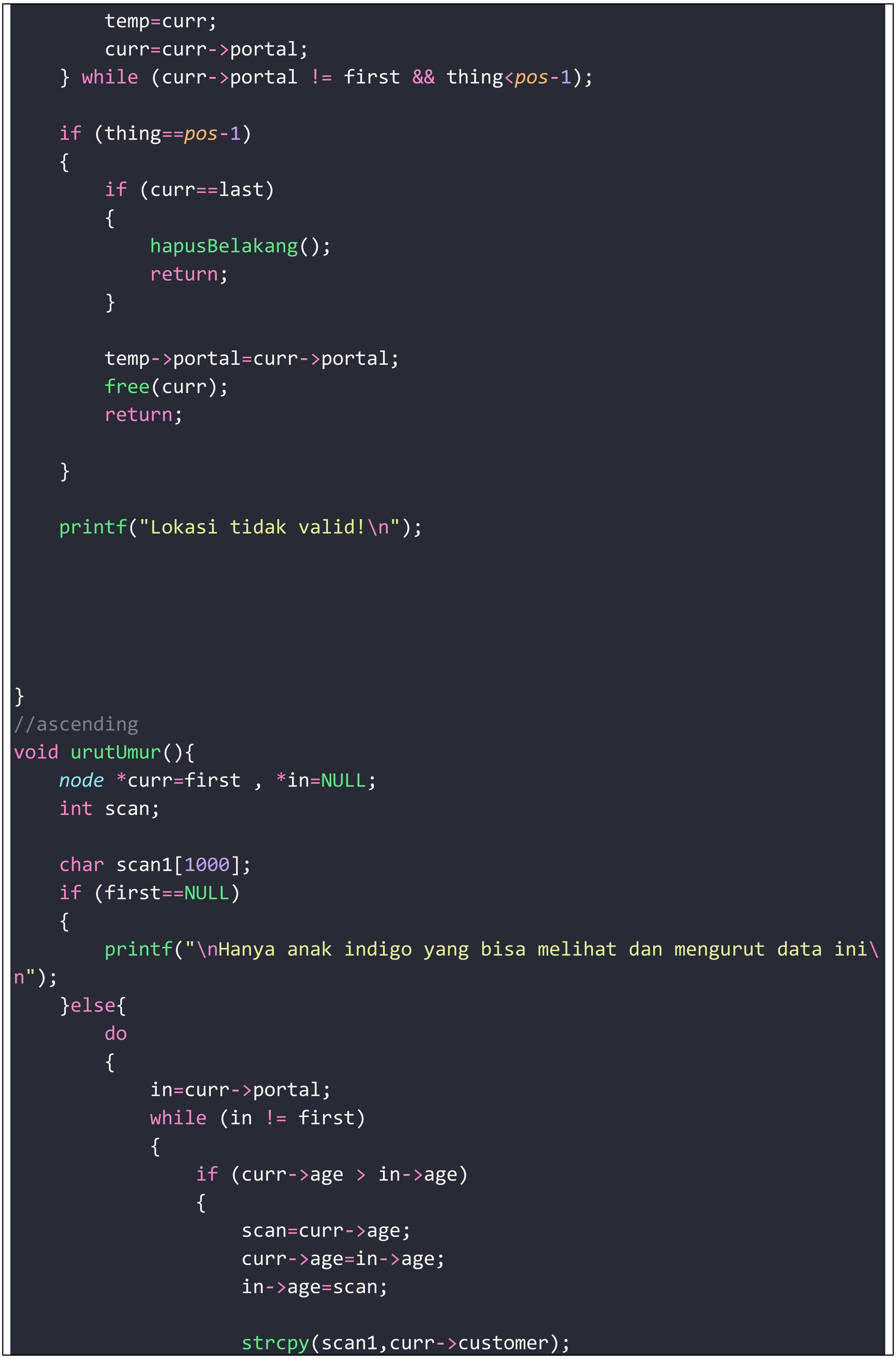
```
    node *scan=(node *) malloc(sizeof(node));

    strcpy(scan->customer, nama);
    scan->age=umur;
    scan->rating=nilai;
    scan->portal=scan;

    if (first==NULL)
    {
        first=scan;
        last=scan;
    }else{
        last->portal = scan;
        scan->portal= first;
        last=scan;
    }


}

void tambahSesuaiKeinginan(char nama[], int umur, int nilai, int pos){

    if (pos==1)
    {
        tambahDepan(nama,umur,nilai);
        return;
    }else if (pos>1 && first!=NULL)
    {
        node *curr=first;
        node *temp = (node *)malloc(sizeof(node));
        int thing = 0;

        do
        {
            thing++;
            temp = curr;
            curr=curr->portal;
        } while (curr->portal != first && thing<pos-1);

        if (thing==pos-1)
        {
            if (temp==last)
            {
                tambahBelakang(nama,umur,nilai);
            }else{
                node *scan = (node *)malloc(sizeof(node));
                strcpy(scan->customer, nama);
```



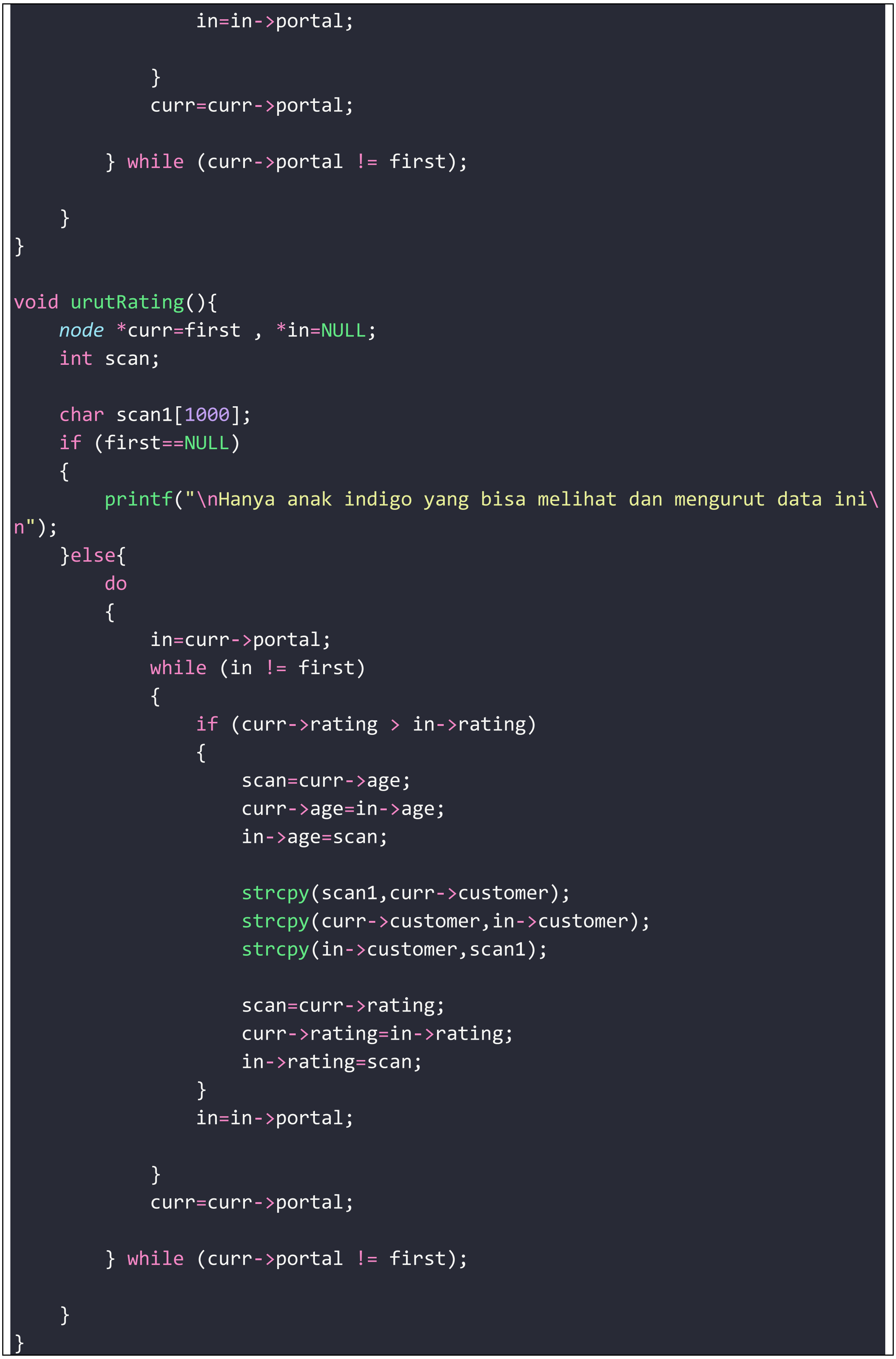
```
                scan->age=umur;
                scan->rating=nilai;

                temp->portal=scan;
                scan->portal=curr;
            }
            return;


        }


    }

    printf("Lokasi yang tidak valid!\n");



}

void hapusDepan(){

    if (first==NULL)
    {
        printf("\nHanya anak indigo yang bisa melihat dan menghapus data ini
\n");
        return;
    }

    node *temp = first;
    if(first->portal==first){
        first=NULL;
        last=NULL;
    }
    else{
        first=first->portal;
        last->portal=first;
    }
    free(temp);

}

void hapusBelakang(){

    if (first==NULL)
    {
        printf("\nHanya anak indigo yang bisa melihat dan menghapus data ini
\n");
```



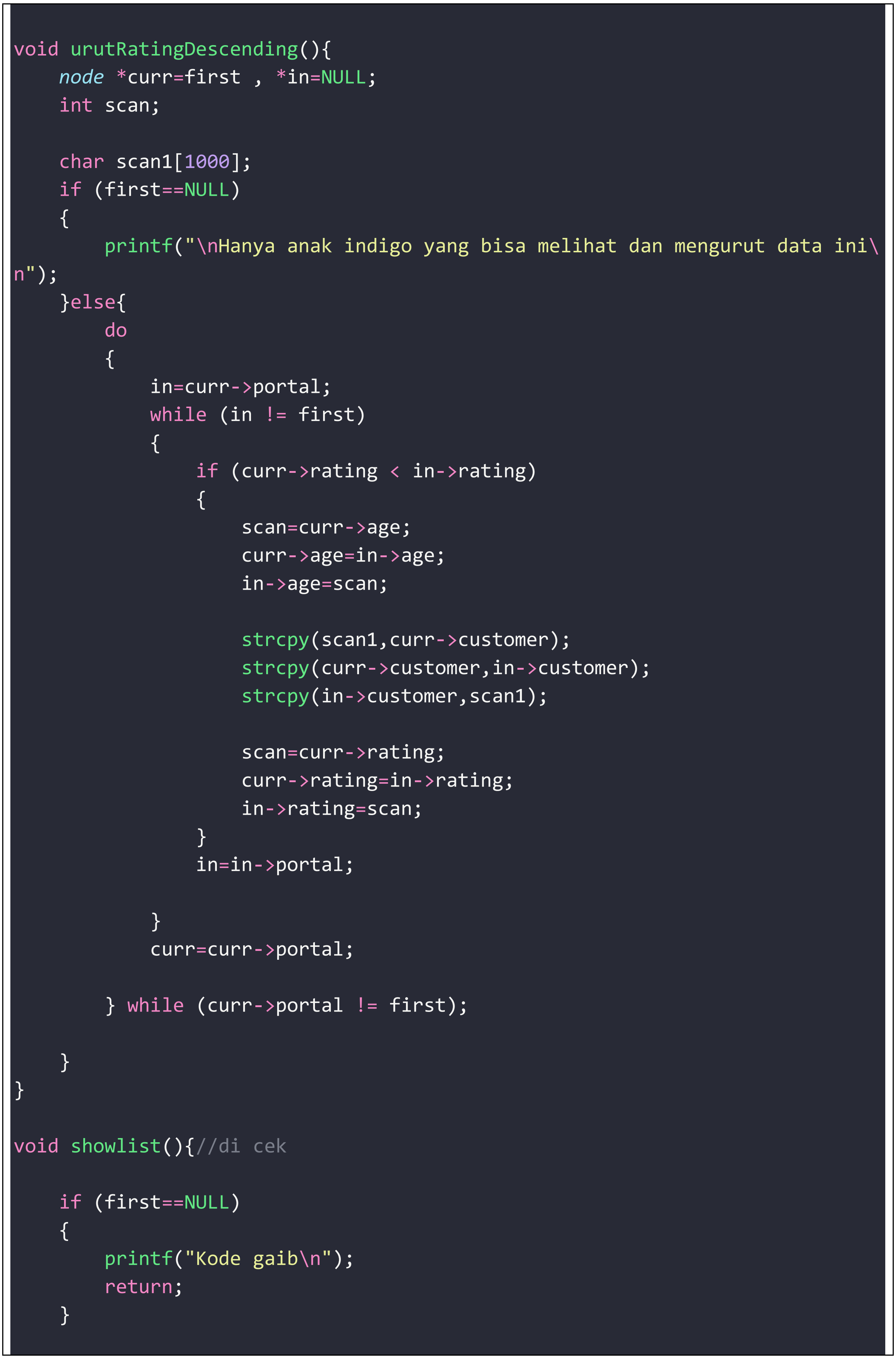
```
        return;
    }

    node *temp = first;
    node *curr = first;

    while (curr->portal != first)
    {
        temp=curr;
        curr=curr->portal;
    }
    if(temp==first&&temp->portal==first){
        first=NULL;
        temp= NULL;
    }
    else{

    temp->portal= curr->portal;
    last = temp; //disambungin ke first
    last=last->portal;
    first->portal=last;
    }
    free(curr);

}

void hapusSesuaiKeinginan(int pos){

    if (first==NULL)
    {
        printf("\nHanya anak indigo yang bisa melihat dan menghapus data ini
\n");
        return;
    }

    if (pos==1)
    {
        hapusDepan();
        return;
    }

    node *curr = first;
    node *temp;
    int thing= 0;

    do
    {
        thing++;
```



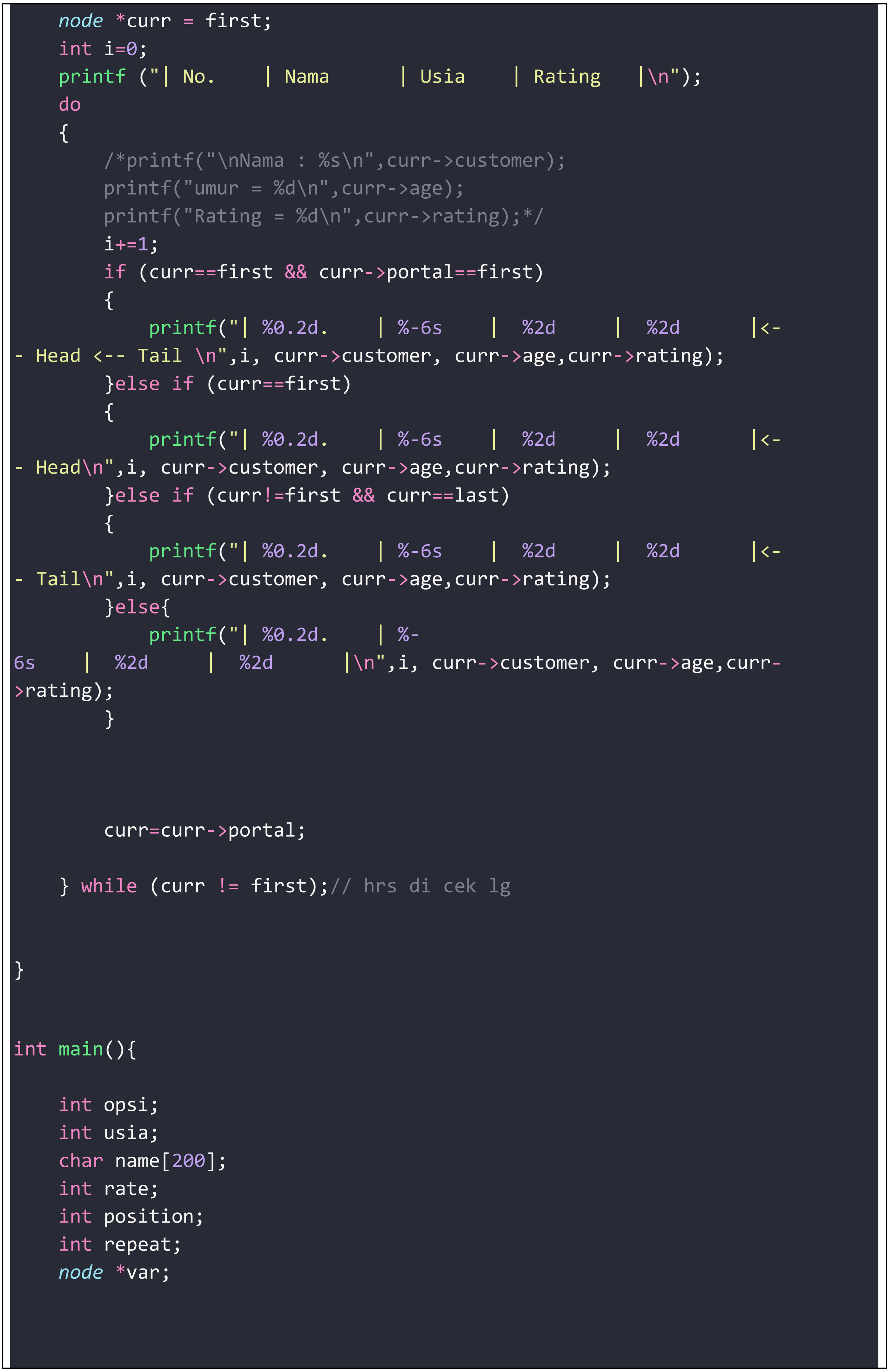
```
        temp=curr;
        curr=curr->portal;
    } while (curr->portal != first && thing<pos-1);

    if (thing==pos-1)
    {
        if (curr==last)
        {
            hapusBelakang();
            return;
        }

        temp->portal=curr->portal;
        free(curr);
        return;

    }

    printf("Lokasi tidak valid!\n");





}
//ascending
void urutUmur(){
    node *curr=first , *in=NULL;
    int scan;

    char scan1[1000];
    if (first==NULL)
    {
        printf("\nHanya anak indigo yang bisa melihat dan mengurut data ini\
n");
    }else{
        do
        {
            in=curr->portal;
            while (in != first)
            {
                if (curr->age > in->age)
                {
                    scan=curr->age;
                    curr->age=in->age;
                    in->age=scan;

                    strcpy(scan1,curr->customer);
                    strcpy(curr->customer,in->customer);
                    strcpy(in->customer,scan1);

                    scan=curr->rating;
                    curr->rating=in->rating;
                    in->rating=scan;
                }
                in=in->portal;

            }
            curr=curr->portal;

        } while (curr->portal != first);

    }


}

void urutUmurDescending(){
    node *curr=first , *in=NULL;
    int scan;

    char scan1[1000];
    if (first==NULL)
    {
        printf("\nHanya anak indigo yang bisa melihat dan mengurut data ini\n");
    }else{
        do
        {
            in=curr->portal;
            while (in != first)
            {
                if (curr->age < in->age)
                {
                    scan=curr->age;
                    curr->age=in->age;
                    in->age=scan;

                    strcpy(scan1,curr->customer);
                    strcpy(curr->customer,in->customer);
                    strcpy(in->customer,scan1);

                    scan=curr->rating;
                    curr->rating=in->rating;
                    in->rating=scan;
                }
```



```
                in=in->portal;

            }
            curr=curr->portal;

        } while (curr->portal != first);

    }
}

void urutRating(){
    node *curr=first , *in=NULL;
    int scan;

    char scan1[1000];
    if (first==NULL)
    {
        printf("\nHanya anak indigo yang bisa melihat dan mengurut data ini\
n");
    }else{
        do
        {
            in=curr->portal;
            while (in != first)
            {
                if (curr->rating > in->rating)
                {
                    scan=curr->age;
                    curr->age=in->age;
                    in->age=scan;

                    strcpy(scan1,curr->customer);
                    strcpy(curr->customer,in->customer);
                    strcpy(in->customer,scan1);

                    scan=curr->rating;
                    curr->rating=in->rating;
                    in->rating=scan;
                }
                in=in->portal;

            }
            curr=curr->portal;

        } while (curr->portal != first);

    }
}
```

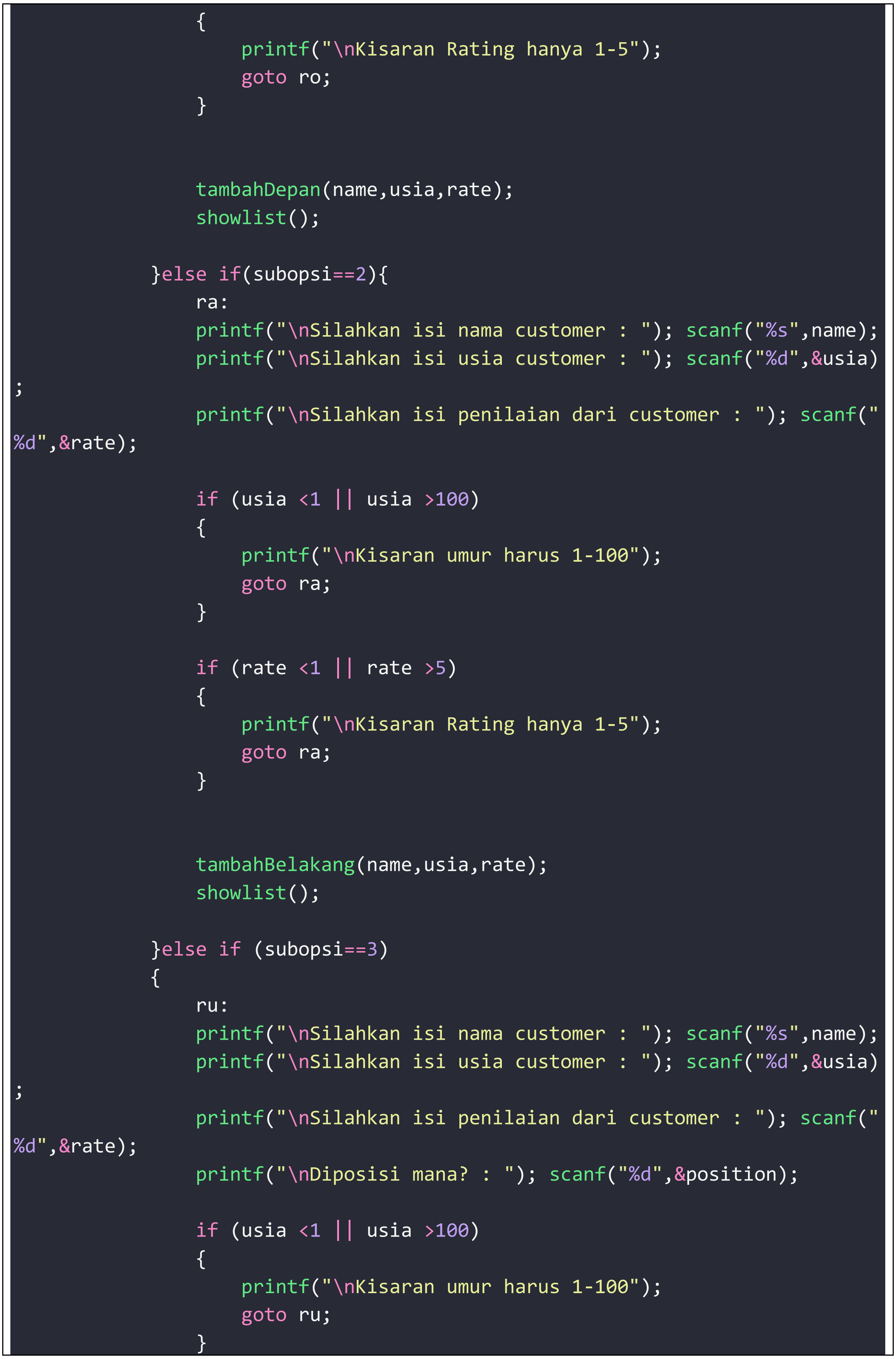


```
void urutRatingDescending(){
    node *curr=first , *in=NULL;
    int scan;

    char scan1[1000];
    if (first==NULL)
    {
        printf("\nHanya anak indigo yang bisa melihat dan mengurut data ini\
n");
    }else{
        do
        {
            in=curr->portal;
            while (in != first)
            {
                if (curr->rating < in->rating)
                {
                    scan=curr->age;
                    curr->age=in->age;
                    in->age=scan;

                    strcpy(scan1,curr->customer);
                    strcpy(curr->customer,in->customer);
                    strcpy(in->customer,scan1);

                    scan=curr->rating;
                    curr->rating=in->rating;
                    in->rating=scan;
                }
                in=in->portal;

            }
            curr=curr->portal;

        } while (curr->portal != first);

    }
}

void showlist(){//di cek

    if (first==NULL)
    {
        printf("Kode gaib\n");
        return;
    }
```

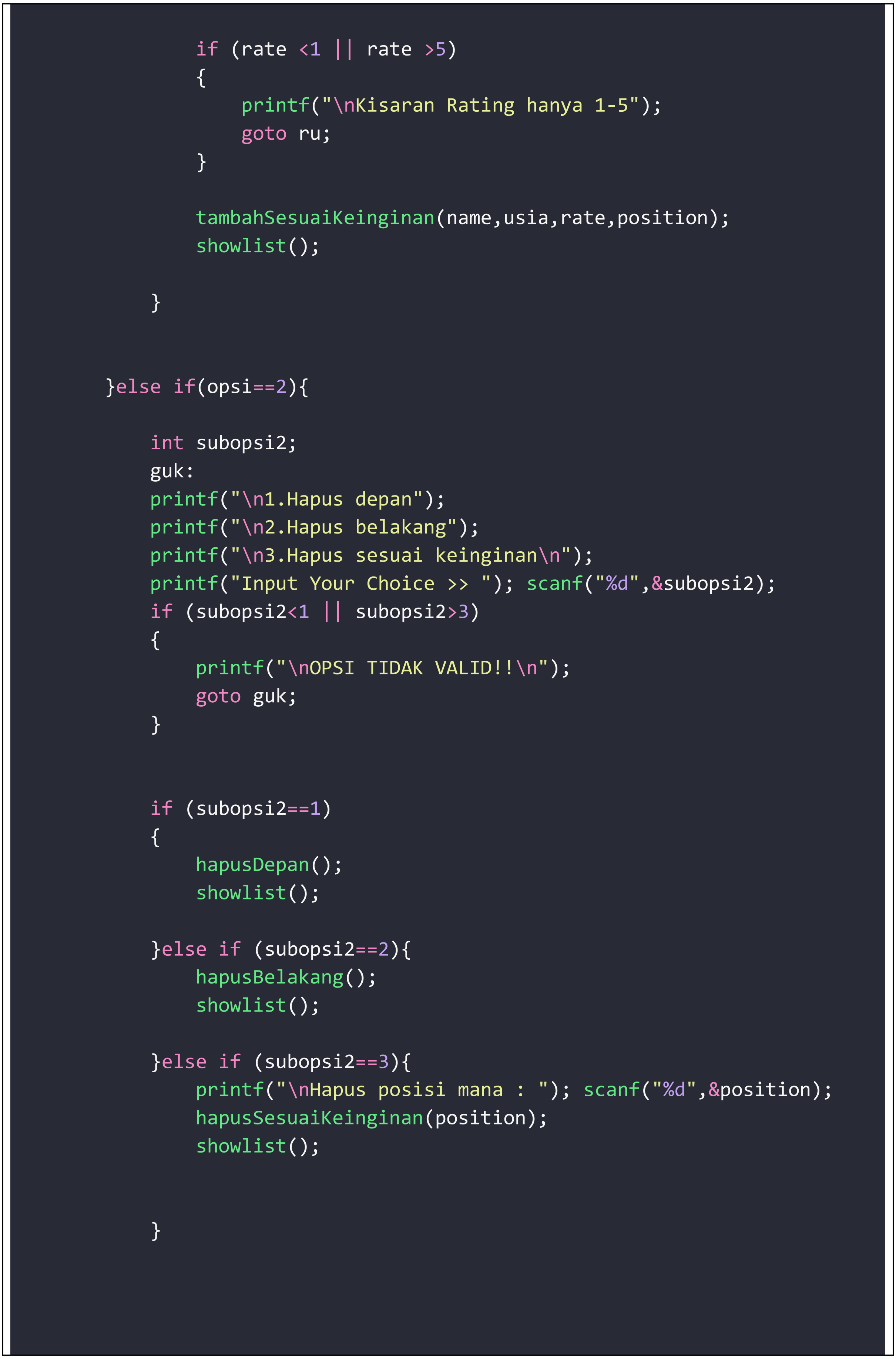


```
    node *curr = first;
    int i=0;
    printf ("| No.    | Nama      | Usia    | Rating   |\n");
    do
    {
        /*printf("\nNama : %s\n",curr->customer);
        printf("umur = %d\n",curr->age);
        printf("Rating = %d\n",curr->rating);*/
        i+=1;
        if (curr==first && curr->portal==first)
        {
            printf("| %0.2d.    | %-6s    |  %2d     |  %2d      |<-
- Head <-- Tail \n",i, curr->customer, curr->age,curr->rating);
        }else if (curr==first)
        {
            printf("| %0.2d.    | %-6s    |  %2d     |  %2d      |<-
- Head\n",i, curr->customer, curr->age,curr->rating);
        }else if (curr!=first && curr==last)
        {
            printf("| %0.2d.    | %-6s    |  %2d     |  %2d      |<-
- Tail\n",i, curr->customer, curr->age,curr->rating);
        }else{
            printf("| %0.2d.    | %-
6s    |  %2d     |  %2d      |\n",i, curr->customer, curr->age,curr-
>rating);
        }



        curr=curr->portal;

    } while (curr != first);// hrs di cek lg


}


int main(){

    int opsi;
    int usia;
    char name[200];
    int rate;
    int position;
    int repeat;
    node *var;


```

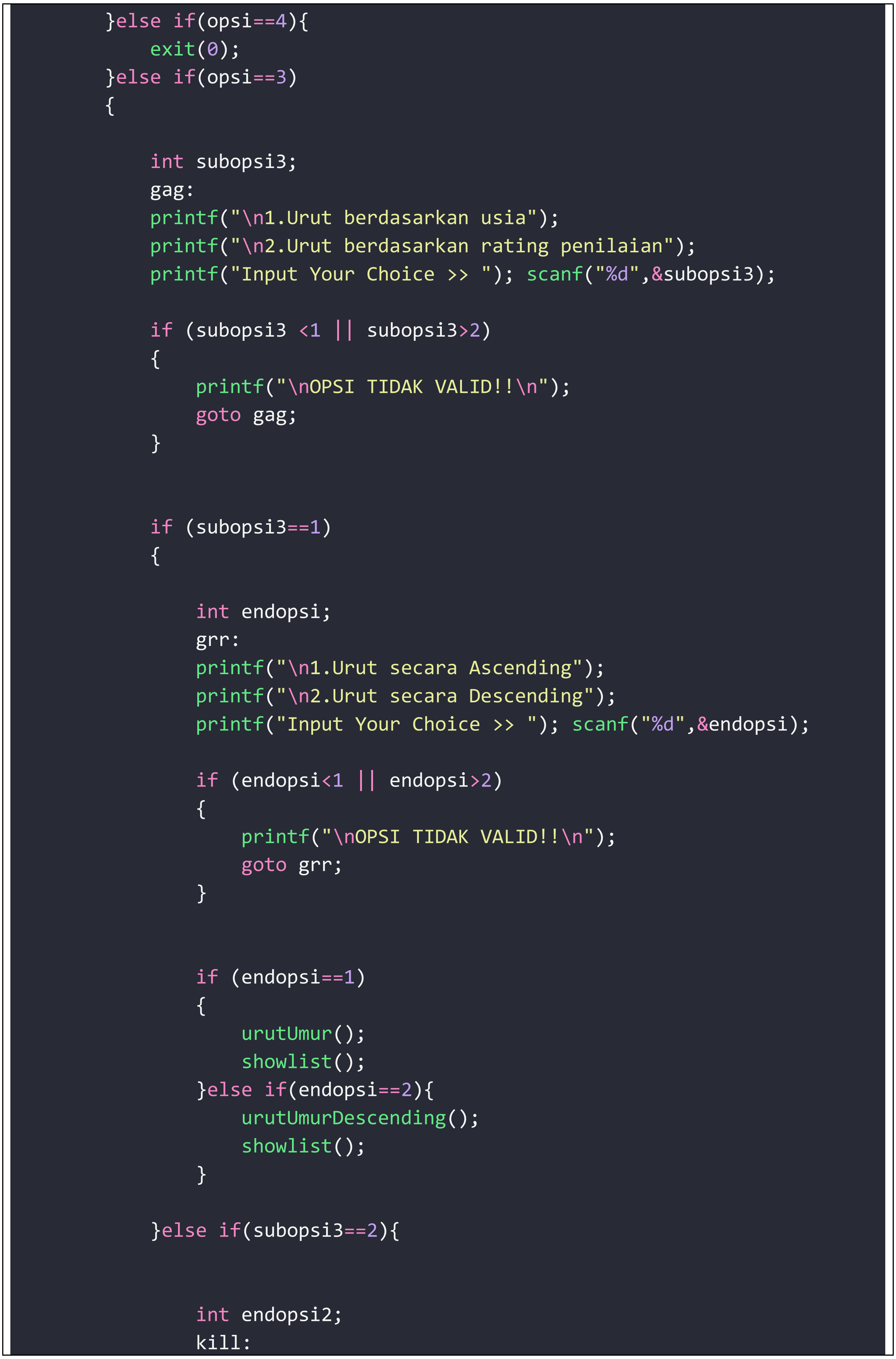
```
   do
   {
        line();
        printf("KUMPULAN DATA PENILAIAN CUSTOMER\n");
        line();
        printf("\n[1] Tambah data penilaian\n");
        printf("[2] Hapus data penilaian \n");
        printf("[3] Urut data\n");
        printf("[4] Kill Program\n");
        printf("Input Your Choice >> "); scanf("%d",&opsi);

        if (opsi<1 || opsi>4)
        {
            printf("\nOPSI TIDAK VALID!!\n");
        }
       if (opsi==1)
        {

            int subopsi;
            ga:
            printf("\n1.tambah depan");
            printf("\n2.tambah belakang");
            printf("\n3.tambah sesuai keinginan\n");
            printf("Input Your Choice >> "); scanf("%d",&subopsi);

            if (subopsi<1 || subopsi>3)
            {
                printf("\nOPSI TIDAK VALID!!\n");
                goto ga;
            }


            if (subopsi==1)
            {
                ro:
                printf("\nSilahkan isi nama customer : "); scanf("%s",name);
                printf("\nSilahkan isi usia customer : "); scanf("%d",&usia)
;
                printf("\nSilahkan isi penilaian dari customer : "); scanf("
%d",&rate);
                if (usia <1 || usia >100)
                {
                    printf("\nKisaran umur harus 1-100");
                    goto ro;
                }

                if (rate <1 || rate >5)
```



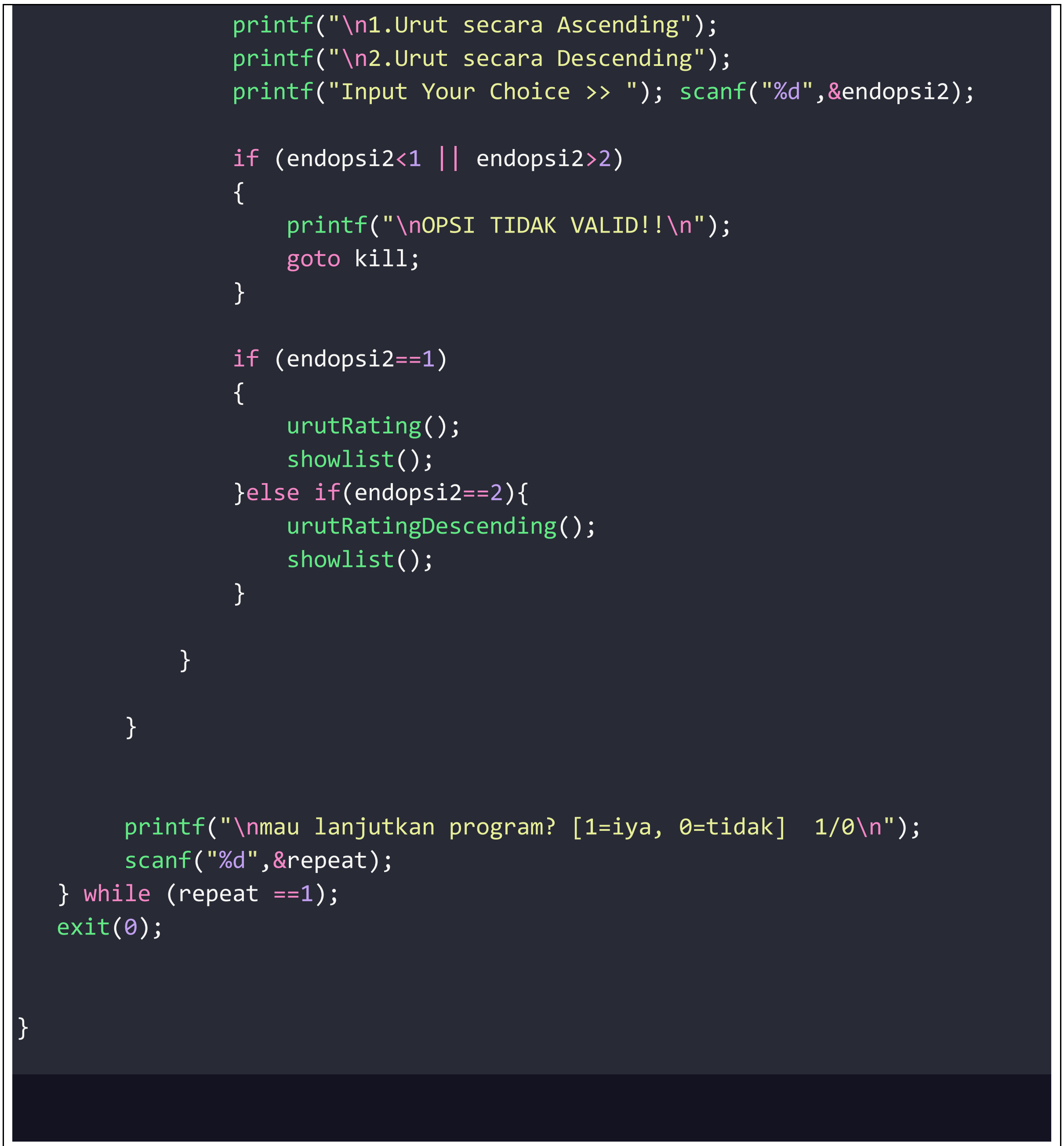
```
        {
          printf("\nKisaran Rating hanya 1-5");
          goto ro;
        }


        tambahDepan(name,usia,rate);
        showlist();

      }else if(subopsi==2){
        ra:
        printf("\nSilahkan isi nama customer : "); scanf("%s",name);
        printf("\nSilahkan isi usia customer : "); scanf("%d",&usia)
;
        printf("\nSilahkan isi penilaian dari customer : "); scanf("
%d",&rate);

        if (usia <1 || usia >100)
        {
          printf("\nKisaran umur harus 1-100");
          goto ra;
        }

        if (rate <1 || rate >5)
        {
          printf("\nKisaran Rating hanya 1-5");
          goto ra;
        }


        tambahBelakang(name,usia,rate);
        showlist();

      }else if (subopsi==3)
      {
        ru:
        printf("\nSilahkan isi nama customer : "); scanf("%s",name);
        printf("\nSilahkan isi usia customer : "); scanf("%d",&usia)
;
        printf("\nSilahkan isi penilaian dari customer : "); scanf("
%d",&rate);
        printf("\nDiposisi mana? : "); scanf("%d",&position);

        if (usia <1 || usia >100)
        {
          printf("\nKisaran umur harus 1-100");
          goto ru;
        }
```



```
            if (rate <1 || rate >5)
            {
                printf("\nKisaran Rating hanya 1-5");
                goto ru;
            }

            tambahSesuaiKeinginan(name,usia,rate,position);
            showlist();

        }


    }else if(opsi==2){

        int subopsi2;
        guk:
        printf("\n1.Hapus depan");
        printf("\n2.Hapus belakang");
        printf("\n3.Hapus sesuai keinginan\n");
        printf("Input Your Choice >> "); scanf("%d",&subopsi2);
        if (subopsi2<1 || subopsi2>3)
        {
            printf("\nOPSI TIDAK VALID!!\n");
            goto guk;
        }


        if (subopsi2==1)
        {
            hapusDepan();
            showlist();

        }else if (subopsi2==2){
            hapusBelakang();
            showlist();

        }else if (subopsi2==3){
            printf("\nHapus posisi mana : "); scanf("%d",&position);
            hapusSesuaiKeinginan(position);
            showlist();


        }
```



```
        }else if(opsi==4){
            exit(0);
        }else if(opsi==3)
        {

            int subopsi3;
            gag:
            printf("\n1.Urut berdasarkan usia");
            printf("\n2.Urut berdasarkan rating penilaian");
            printf("Input Your Choice >> "); scanf("%d",&subopsi3);

            if (subopsi3 <1 || subopsi3>2)
            {
                printf("\nOPSI TIDAK VALID!!\n");
                goto gag;
            }


            if (subopsi3==1)
            {

                int endopsi;
                grr:
                printf("\n1.Urut secara Ascending");
                printf("\n2.Urut secara Descending");
                printf("Input Your Choice >> "); scanf("%d",&endopsi);

                if (endopsi<1 || endopsi>2)
                {
                    printf("\nOPSI TIDAK VALID!!\n");
                    goto grr;
                }


                if (endopsi==1)
                {
                    urutUmur();
                    showlist();
                }else if(endopsi==2){
                    urutUmurDescending();
                    showlist();
                }

            }else if(subopsi3==2){


                int endopsi2;
                kill:
```



```
                printf("\n1.Urut secara Ascending");
                printf("\n2.Urut secara Descending");
                printf("Input Your Choice >> "); scanf("%d",&endopsi2);

                if (endopsi2<1 || endopsi2>2)
                {
                    printf("\nOPSI TIDAK VALID!!\n");
                    goto kill;
                }

                if (endopsi2==1)
                {
                    urutRating();
                    showlist();
                }else if(endopsi2==2){
                    urutRatingDescending();
                    showlist();
                }

            }

        }


        printf("\nmau lanjutkan program? [1=iya, 0=tidak]  1/0\n");
        scanf("%d",&repeat);
    } while (repeat ==1);
    exit(0);


}
```

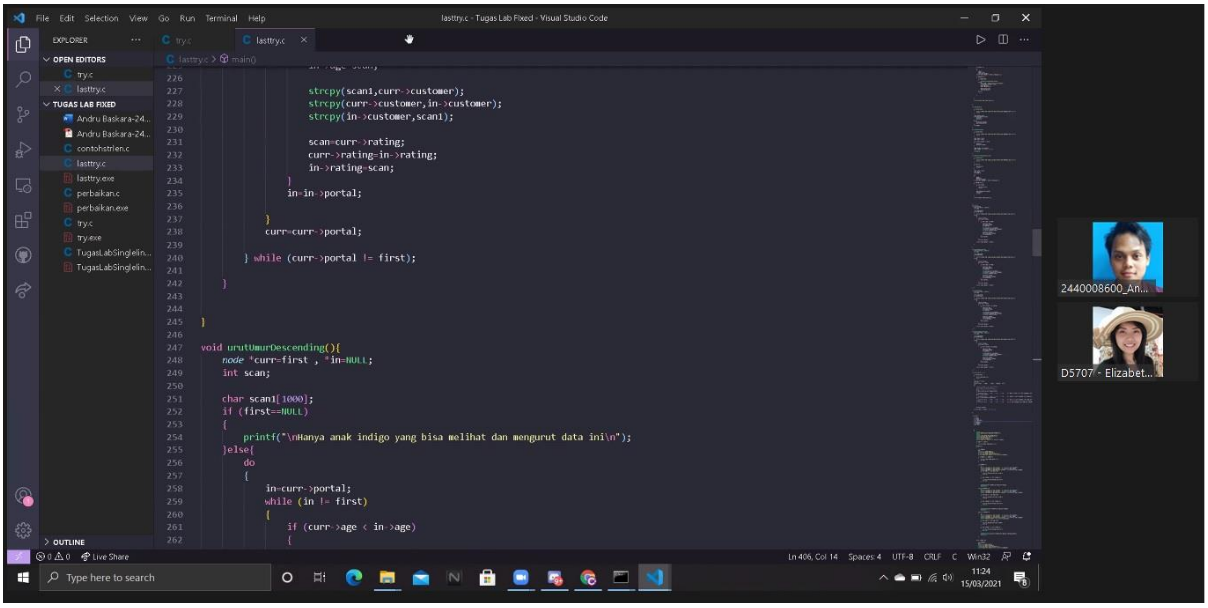
B. Deskripsi Program

Program menampilkaan UI dari menu utama, Lalu terdapat beberapa pilihan mengenai opsi menu apa yang akan user jalankan. Jika user memilih satu, maka akan ditampilkan 3 pilihan opsi. Yaitu opsi tambah depan, tambah belakang dan tambah sesuai keinginan. Jika user memilih tambah depan, maka program akan memanggil fungsi tambah depan, jika memilih tambah belakang, maka program akan memanggil tambah belakang, Jika memilih tambah sesuai keinginan maka program akan memanggil fungsi tambah sesuai keinginan.

Jika user memilih opsi 2 maka ditampilkan 3 pilihan opsi yaitu hapus depan, belakang dan sesuai keinginan. Jika user memilih hapus depan, maka program akan menghapus data yang ada pada head, jika memilih hapus belakang, maka program akan menghapus data yang ada pada ekor, jika memilih sesuai keinginan maka progtam akan menghapus data sesuai keinginan user

Jika uder memilih opsi 3, maka akan ditampilkan beberapa pilihan sorting kategori beeserta bagaimana urutan dari sorting tersebut. Jika ascending, maka program akan mengurut data dari terkecil ke terbesar, jika descending, maka program akan mengurut dari terbesar ke terkecil.

C. Bukti Presentasi



```
                    strcpy(scan1,curr->customer);
                    strcpy(curr->customer,in->customer);
                    strcpy(in->customer,scan1);

                    scan=curr->rating;
                    curr->rating=in->rating;
                    in->rating=scan;
                }
                in=in->portal;

            }
            curr=curr->portal;

        } while (curr->portal != first);

    }


}

void urutUmurDescending(){
    node *curr=first , *in=NULL;
    int scan;

    char scan1[1000];
    if (first==NULL)
    {
        printf("\nHanya anak indigo yang bisa melihat dan mengurut data ini\n");
    }else{
        do
        {
            in=curr->portal;
            while (in != first)
            {
                if (curr->age < in->age)
                {
```