NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES
(KARACHI CAMPUS)
Department of Computer Science
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Project Report: **[Advance Search Engine For Smartphones (Online Mobile Shopping)]**

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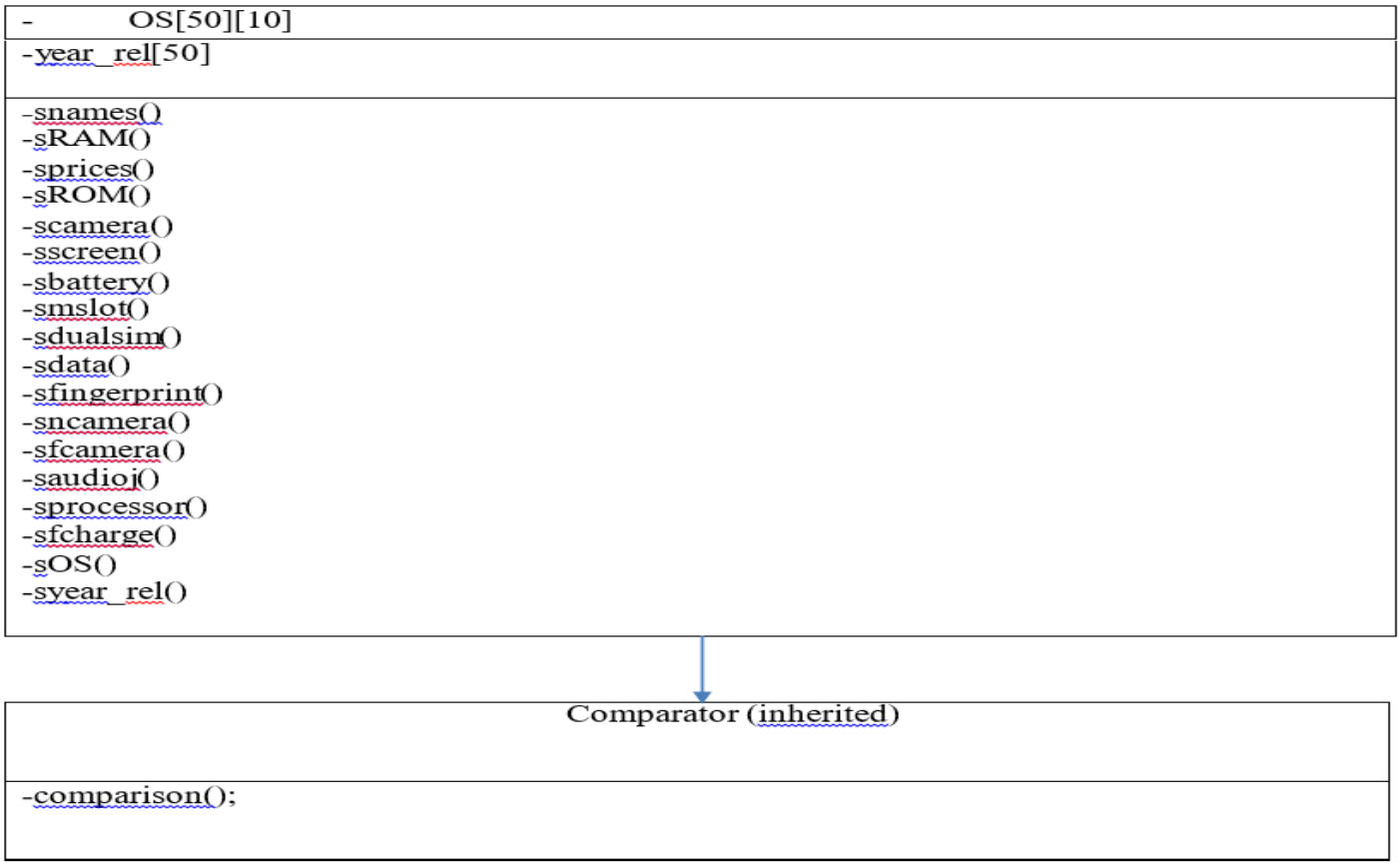
Overview:

The software is a search engine for smartphones. It will provide the user a list of relevant and valid options and after processing it, the program will filter out the smartphones which does not meet the criteria stated by the user. The program will then finally display the names of the smartphones that does meet the criteria and will also provide the user an option to compare two chosen smartphones together. The program, after comparison, will finally display a passage in English comparing the two chosen products together. The user will be given a choice to place an order of his/her desired product. If accepted, an Invoice will be generated containing all relevant information.

Class Diagrams:

FindPhone
-names[50][100] - RAM[50] - prices[50] - ROM[50] - camera[50] - screen[50] - battery[50] - mslot[50][4] - dualsim[50][4] -data[50][3] - fingerprint[50][4] - ncamera[50] - fcamera[50] - audioj[50][4] - processor[50] - fcharge[50][4]



Input:

• User will be provided with a list of valid and relative options from which he/she can select the desired feature from e.g.:

```
                        >>>>-------Welcome To Advance Search!-------<<<<
------------------------------------------------------------------------------------------------------------------------

Please Select A Valid Option From The list Provided Below:

Select Year:

1: 2015
2: 2016
3: 2017
4: 2018
5: 2019
6: 2020
7: 2021
8: Skip

Your Input: 9
Please Enter A Valid Number: 8

Select Price:

1: 5000 to 19'999
2: 20'000 to 29'999
3: 30'000 to 49'999
4: 50'000 to 99'999
5: 100'000 to 149'999
6: Above 150'000
7: Skip

Your Input: 3
```

Output:

- After taking the input, the program will filter out the smartphones that does not meet the required criteria and finally outputs the name of the products that does meet the criteria!

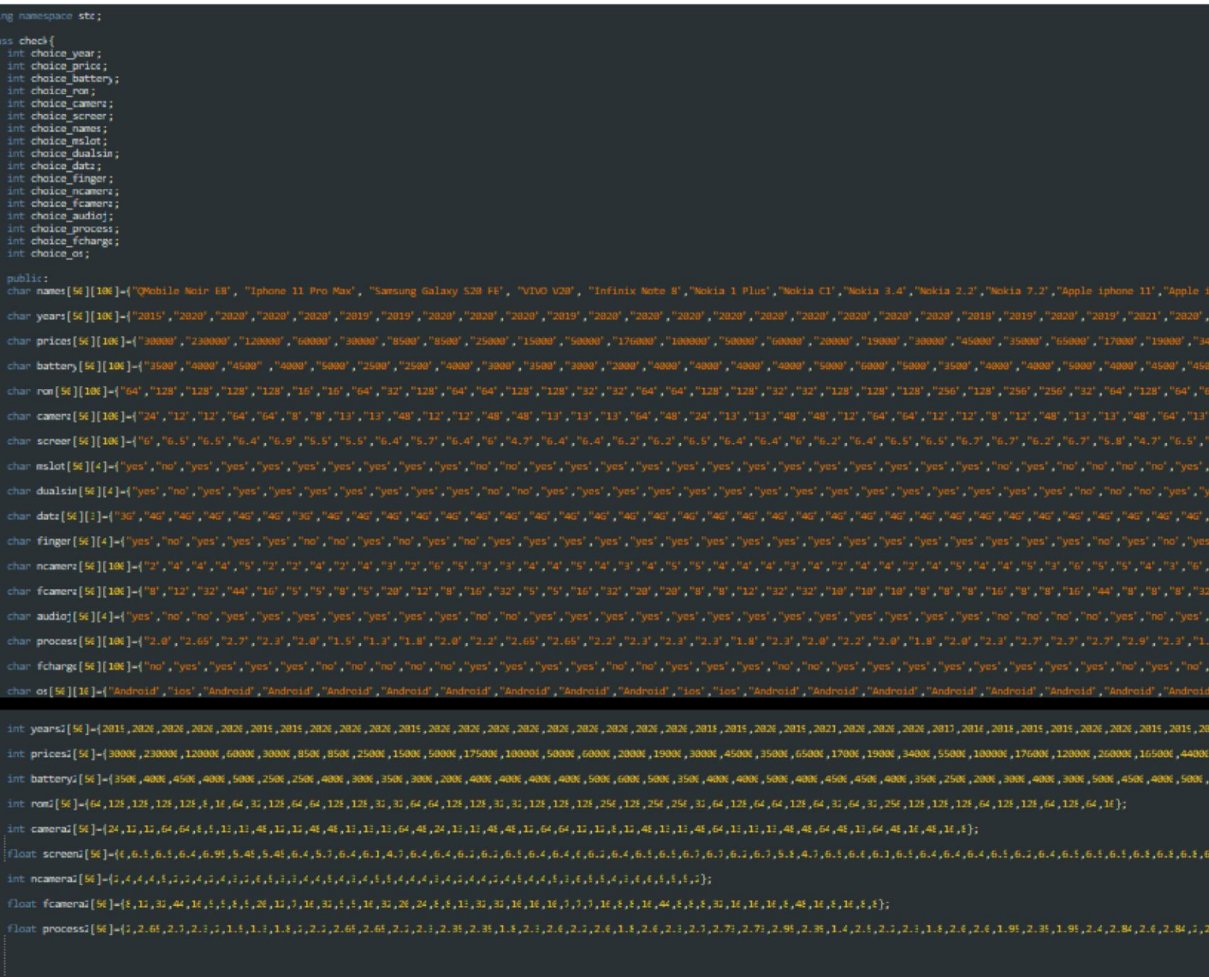
```
Your best Option/s is/are:
Samsung Galaxy S20 FE
VIVO V20
Oppo F17 pro
Oppo Reno 4
Samsung Galaxy A7
Samsung Galaxy A51
Samsung Galaxy Note 10 LITE
Samsung Galaxy S20
OnePlus 8T
OnePlus 8
```

- Along with this, user will be provided with a choice to compare any two products of his/her choice, the program then will print a passage in English comparing the two products together.

```
Phone 1: 4
Phone 2: 40
*)The price of OnePlus Nord is higher than the price of VIVO V20
*)OnePlus Nord has higher RAM than VIVO V20
*)OnePlus Nord has higher ROM than VIVO V20
*)VIVO V20's camera has higher mega pixels than the camera of OnePlus Nord
*)VIVO V20's screen is same as of OnePlus Nord
*)OnePlus Nord's battery is larger than the battery of VIVO V20
*)OnePlus Nord has more number of cameras than VIVO V20
*)VIVO V20's front camera has higher mega pixels than the camera of OnePlus Nord
*)VIVO V20 has memory card slot while OnePlus Nord don't have a memory card slot
*)VIVO V20 and OnePlus Nord both have a dual sim slot
*)VIVO V20 and OnePlus Nord both have Android
*)VIVO V20 and OnePlus Nord both have a fingerprint sensor
*)VIVO V20 has audio jack while OnePlus Nord don't have a audio jack
*)VIVO V20 and OnePlus Nord both have fast charging
*)VIVO V20 and OnePlus Nord both have 4G
*)OnePlus Nord has better processor than VIVO V20
```

Step by Step:

- The record is defined within the program



- Then all of the values of the resultant arrays are initialized to zero in order to avoid garbage values being printed.

```
void ini(){
    for (count1=0;count1<50;count1++){
        for (count2=0;count2<100;count2++){
            res1[count1][count2]=0;
            res2[count1][count2]=0;
            res3[count1][count2]=0;
            res4[count1][count2]=0;
            res5[count1][count2]=0;
            res6[count1][count2]=0;
            res7[count1][count2]=0;
            res8[count1][count2]=0;
            res9[count1][count2]=0;
            res10[count1][count2]=0;
            res11[count1][count2]=0;
            res12[count1][count2]=0;
            res13[count1][count2]=0;
            res14[count1][count2]=0;
            res15[count1][count2]=0;
            res16[count1][count2]=0;

        }
    }
}
```

- Then the list for choice is printed

```
t main(){
  cout<<"                                >>>>-------Welcome To Advance Search!-------<<<<\n";
  cout<<"-------------------------------------------------------------------------------------------------------------
  cout<<"Please Select A Valid Option From The list Provided Below:\n\n";
  cout<<"Select Year: \n\n";
  cout<<"1: 2015\n";
  cout<<"2: 2016\n";
  cout<<"3: 2017\n";
  cout<<"4: 2018\n";
  cout<<"5: 2019\n";
  cout<<"6: 2020\n";
  cout<<"7: 2021\n\n";
  int year;
  cout<<"Your Input: ";
  cin>>year;
  while((year<1)||(year>7)){
      cout<<"Please Enter A Valid Number: ";
      cin>>year;
  }
```

- Via multiple complex ‘if’ conditions, the valid input is processed and the name of the smartphone (which meets the specified criteria) is assigned to the resultant array. The same method is applied for the rest of the inputs.

```
            if (compare==0){
            strcpy(res6[count1], names[count1]);
            }
        }
    }
}
void checkmslot(){
    if (choice_mslot==1){
        for (count1=0;count1<50;count1++){
            compare=strcmp(mslot[count1],"yes");
            if (compare==0){
            strcpy(res7[count1], names[count1]);
            }
        }
    }
    if (choice_mslot==2){
        for (count1=0;count1<50;count1++){
            compare=strcmp(mslot[count1],"no");
            if (compare==0){
            strcpy(res7[count1], names[count1]);
            }
        }
    }
}
void checkdualsim(){
    if (choice_dualsim==1){
        for (count1=0;count1<50;count1++){
            compare=strcmp(dualsim[count1],"yes");
            if (compare==0){
            strcpy(res8[count1], names[count1]);
            }
        }
    }
    if (choice_dualsim==2){
        for (count1=0;count1<50;count1++){
            compare=strcmp(dualsim[count1],"no");
            if (compare==0){
            strcpy(res8[count1], names[count1]);
            }
        }
    }
}
    void checkdata(){
    if (choice_data==1){
        for (count1=0;count1<50;count1++){
            compare=strcmp(data[count1],"4G");
            if (compare==0){
            strcpy(res9[count1], names[count1]);
            }
        }
    }
    if (choice_data==2){
        for (count1=0;count1<50;count1++){
            compare=strcmp(data[count1],"3G");
            if (compare==0){
            strcpy(res9[count1], names[count1]);
            }
        }
    }
}
    void checkfinger(){
    if (choice_finger==1){
        for (count1=0;count1<50;count1++){
            compare=strcmp(finger[count1],"yes");
            if (compare==0){
            strcpy(res10[count1], names[count1]);
            }
        }
    }
    if (choice_finger==2){
        for (count1=0;count1<50;count1++){
            compare=strcmp(finger[count1],"no");
            if (compare==0){
            strcpy(res10[count1], names[count1]);
            }
        }
    }
```

- After the selection of the valid inputs, the resultant arrays are compared with each other and only the name of those products are printed which are common in all resultant arrays.

```
void disp(check obj2){
    int count1,flag=0;
    cout<<"\n-------------------------------------------------------------------------------------------------------------------------\n";
    cout<<"Best available option: \n";
    for (count1=0;count1<5;count1++){
    int x1=strcmp(obj2.res1[count1],obj2.res2[count1]);
    int x2=strcmp(obj2.res1[count1],obj2.res3[count1]);
    int x3=strcmp(obj2.res1[count1],obj2.res4[count1]);
    int x4=strcmp(obj2.res1[count1],obj2.res5[count1]);
    int x5=strcmp(obj2.res1[count1],obj2.res6[count1]);
    int x6=strcmp(obj2.res1[count1],obj2.res7[count1]);
    int x7=strcmp(obj2.res1[count1],obj2.res8[count1]);
    int x8=strcmp(obj2.res1[count1],obj2.res9[count1]);
    int x9=strcmp(obj2.res1[count1],obj2.res10[count1]);
    int x10=strcmp(obj2.res1[count1],obj2.res11[count1]);
    int x101=strcmp(obj2.res1[count1],obj2.res12[count1]);
    int x11=strcmp(obj2.res1[count1],obj2.res13[count1]);
    int x12=strcmp(obj2.res1[count1],obj2.res14[count1]);
    int x13=strcmp(obj2.res1[count1],obj2.res15[count1]);
    int x14=strcmp(obj2.res1[count1],obj2.res16[count1]);

    if ((x2==0)&&(x1==0)&&(x3==0)&&(x4==0)&&(x5==0)&&(x6==0)&&(x7==0)&&(x8==0)&&(x9==0)&&(x101==0)&&(x11==0)&&(x12==0)&&(x13==0)&&(x14==0)){
    cout<<obj2.res1[count1];
    flag=1;
    }
    }
    if(flag!=1){
    cout<<"\nSorry, There is no phone available right now that meets your criteria!";
    }
    cout<<"\n-------------------------------------------------------------------------------------------------------------------------\n";
}

 cout<<"\n\nDo You Want To Compare Your Desired Product With Other Smartphone? 'y' For Yes And 'n' For No: ";
 char cmp;
 cin>>cmp;
 if ((cmp=='y')||(cmp=='Y')){
     obj1.disp();
 }
 cout<<"\nDo You Want To Place An Order? 'y' For Yes And 'n' For No:  ";
 char prod;
 cin>>prod;
 if ((prod=='y')||(prod=='Y')){
     check n;
     invoice(n);
 }
```

- After the recommendation, the program will provide the user with a choice of comparison between the desired products. The program will print a list of all the products that are present in the stored record
- The user will then be asked to enter the serial number of the two smartphone he/she wishes to compare

```
cout<<"\nEnter choosen product's no: ";
cout<<"\nPhone 1's Serial Number: ";
cin>>selected1;
cout<<"Phone 2's Serial Number: ";
cin>>selected2;
selected1--;
selected2--;
while (selected1==selected2){
    cout<<"\nERROR! Input again: ";
    cout<<"\n\nPhone 1's Serial Number: ";
    cin>>selected1;
    cout<<"\n\nPhone 2's Serial Number: ";
    cin>>selected2;
    selected1--;
    selected2--;
}
```

- The program will then compare all the features of the chosen products. Finally after the comparison, the program will print line by line comparison of all the features of the chosen products.

```
  if (prices2[selected1]>prices2[selected2]){
  cout<<"\n* Price of "<<names[selected1]<<" is higher than "<<names[selected2]<<endl;
  }
  else
  {
      cout<<"\n* Price of "<<names[selected2]<<" is higher than "<<names[selected1]<<endl;
  }

  if (years2[selected1]>years2[selected2]){

  cout<<"\n* "<<names[selected1]<<" was released after "<<names[selected2]<<endl;

  }
  else
  {
  cout<<"\n* "<<names[selected2]<<" was released after "<<names[selected1]<<endl;
  }

f (battery2[selected1]>battery2[selected2]){

  cout<<"\n* "<<names[selected1]<<"'s battery is bigger than "<<names[selected2]<<endl;

  }
  else
  {
  cout<<"\n* "<<names[selected2]<<"'s battery is bigger than "<<names[selected1]<<endl;
  }

f (rom2[selected1]>rom2[selected2]){

  cout<<"\n* "<<names[selected1]<<"'s ROM is bigger than "<<names[selected2]<<endl;

  }
  else
  {
  cout<<"\n* "<<names[selected2]<<"'s ROM is bigger than "<<names[selected1]<<endl;
  }

f (camera2[selected1]>camera2[selected2]){

  cout<<"\n* "<<names[selected1]<<"'s camera has more megapixels than "<<names[selected2]<<endl;

  }
  else
  {
  cout<<"\n* "<<names[selected2]<<"'s camera has more megapixels than "<<names[selected1]<<endl;
  }

f (screen2[selected1]>screen2[selected2]){

  cout<<"\n* "<<names[selected1]<<" has bigger screen than "<<names[selected2]<<endl;

  }
  else
  {
  cout<<"\n* "<<names[selected2]<<" has bigger screen than "<<names[selected1]<<endl;
  }

f(strcmp(mslot[selected1],mslot[selected2])>0){
  cout<<"\n* "<<names[selected1]<<" has memory card slot while "<<names[selected2]<<" doesn't have memory card slot"<<endl;

lse{
  cout<<"\n* "<<names[selected2]<<" has memory card slot while "<<names[selected1]<<" doesn't have memory card slot"<<endl;


f(strcmp(dualsim[selected1],dualsim[selected2])>0){
  cout<<"\n* "<<names[selected1]<<" has dual sim slot while "<<names[selected2]<<" doesn't have dual sim slot"<<endl;

lse{
  cout<<"\n* "<<names[selected2]<<" has dual sim slot while "<<names[selected1]<<" doesn't have dual sim slot"<<endl;
```

- The program will then ask the user that if he/she wants to place an order. If accepted, then the program will generate an INVOICE.txt containing all relevant information.

```
void invoice(check obj){
    int i;
    cout<<"\nPlease Enter The Serial Number Of Your Desired Purchase: ";
    for(i=0;i<=49;i++){
        cout<<"\n"<<i+1<<": ";
        cout<<obj.names[i]<<" ";
        cout<<" price: "<<obj.prices[i]<<" ";
        cout<<" year released "<<obj.years[i]<<endl;
        cout<<"Number of Cameras: "<<obj.ncamera[i];
        cout<<"   memory slot: "<<obj.mslot[i]<<"  finger print: "<<obj.finger[i]<<"  Audio Jack"<<obj.audioj[i]<<"  Dual sim: "<<obj.dualsim[i]<<endl;
        cout<<"Operating System: "<<obj.os[i]<<endl<<"ROM: "<<obj.rom;
        cout<<"**********************************************************************************************************************************************"<<endl;
    }
    int choice;
    cout<<"\n\nEnter serial number: ";
    cin>>choice;
    cout<<"\nPlease Enter Your Name: ";
    string name;
    cin>>name;
    string ph;
    cout<<"Please Enter Your Phone Number: ";
    fflush(stdin);
    cin>>ph;
    bool f=false;
    while(f=false){

    if(ph.length()!=11){
        cout<<"Please Enter a valid mobile number: ";
        cin>>ph;
    }
    else{
        f=true;
    }
}
    string address,city;
    cout<<"Enter your address:";
    cin>>address;
    cout<<"\nWe only ship to following cities:\n1.Karachi\n2.Hyderabad\n3.Lahore\n4.Multan\n5.Islamabad.\nPlease Enter The Serial Number Of Your City: ";


    int n;
    float dcost;
    cin>>n;

    while ((n<0)||(n>5)){
        cout<<"\n Not a valid choice, Please Input Again:";
        cin>>n;
    }
    if(n==1){
        city="Karachi";
        dcost=100;
        f=true;
    }
    else if(n==2){
        city="Hyderabad";
        dcost=100;
            f=true;
    }
    else if(n==3){
        city="Lahore";
        dcost=50;
            f=true;
    }
    else if(n==4){
        city="Multan";
        dcost=50;
            f=true;
    }
```

```
                                                FAST mobile dealer
 ************************************************** INVOICE **************************************************
purchase against name: Aun
Contact Information:
Phone Number:03092581788
Address: B154
city: karachi




Phone Purchased :               |Iphone 11 Pro Max
Phone price:                    |230000
Delivery Cost:                  |1000
Total after tax:                |276000
Total Amount :                  |277000




 your order will reach in 10 to 12 business days.
```

Conclusion:

The program aims to make it easier for the users to find what they are looking for. The search engine will narrow down the list of number of products, consequently aiding the user in making the final decision. If the user is confused between two products, the program will also allow the user to compare the features of the two products together. This program is influenced from the advance search engine of whatmobile.com with some added features like comparison of the features between the chosen products and generation of an Invoice. The program gets the job done like any other search engine and allows the user to make most out of their expenditure.