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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.

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:
Prices
1: <10,000
2: 10,000-20,000
3: 20,000-30,000
4: 30,000-40,000
5: 40,000-50,000
6: >50,000
7: Skip
Input Selected Option: 6
------------------------------------------------------------------------------------------


RAM:
1: 1 GB
2: 2 GB
3: 3 GB
4: 4 GB
5: 6 GB
6: 8 GB
7: SKIP
Input Selected Option: 6
------------------------------------------------------------------------------------------


ROM:
1: 1GB
```

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

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
int main() {
    int count1,input1a,input2a,count2,input3a,i=0,phone1=0,phone2=0,input4a=0,input5a=0,input6a=0,input7a=0,input8a=0,input9a=0,input10a=0,inpu


    char names[50][100]={"QMobile Noir E8", "Iphone 11 Pro Max", "Samsung Galaxy S20 FE", "VIVO V20", "Infinix Note 8","Nokia 1 Plus","Nokia C
//1
    int RAM[50]={3,4,8,8,6,1,1,4,3,6,4,3,8,8,3,2,4,6,4,8,2,2,8,8,8,8,8,8,3,1,4,6,3,4,4,8,3,4,2,12,8,6,8,4,8,8,4,4,4,1};
//2
    int prices[50]={30000,234500,120000,60000,30000,8500,8300,24750,15000,50000,176000,101800,52000,60000,20000,19000,29000,46000,37000,67600,
//3
    int ROM[50]={64,128,128,128,128,8,16,64,32,128,64,64,128,128,32,32,64,64,128,128,32,32,128,128,128,256,128,256,256,32,64,128,64,64,128,64,
//4
    int camera[50]={24,12,12,64,64,8,5,13,13,48,12,12,48,48,13,13,13,64,48,24,13,13,48,48,12,64,64,12,12,8,12,48,13,13,48,64,13,13,13,48,48,64,
//5
    float screen[50]={6,6.5,6.5,6.4,6.95,5.45,5.45,6.4,5.7,6.4,6.1,4.7,6.4,6.4,6.2,6.2,6.5,6.4,6.4,6,6.2,6.4,6.5,6.5,6.7,6.7,6.2,6.7,5.8,4.7,6,
//6
    int battery[50]={3500,3969,4500,4000,5200,2500,2500,4000,3000,3500,3110,1821,4015,4015,4230,4230,5000,6000,5000,3300,4000,4000,5000,4000,45
//7
    char mslot[50][4]={"yes","no","yes","yes","yes","yes","yes","yes","yes","yes","no","no","yes","yes","yes","yes","yes","yes","yes","yes","ye
//8
    char dualsim[50][4]={"yes","no","yes","yes","yes","yes","yes","yes","yes","yes","no","no","yes","yes","yes","yes","yes","yes","yes","yes",
//9
    char data[50][3]={"3G","4G","4G","4G","4G","4G","3G","4G","4G","4G","4G","4G","4G","4G","4G","4G","4G","4G","4G","4G","4G","4G","4G",
//10
    char fingerprint[50][4]={"yes","no","yes","yes","yes","no","no","yes","no","yes","no","yes","yes","yes","yes","yes","yes","yes","yes","yes",
//11
    int ncamera[50]={2,4,4,4,5,2,2,4,2,4,3,2,6,5,3,3,4,4,5,4,3,4,5,5,4,4,4,3,4,2,4,4,2,4,5,4,4,5,3,6,5,5,4,3,6,6,5,5,5,2};
//12
    float fcamera[50]={8,12,32,44,16,5,5,8,5,20,12,7,16,32,5,5,16,32,20,24,8,8,13,32,32,10,10,10,7,7,7,16,8,8,16,44,8,8,8,32,16,16,16,8,48,16,
//13
    char audioj[50][4]={"yes","no","no","yes","yes","yes","yes","yes","yes","yes","no","no","yes","yes","yes","yes","yes","yes","yes","yes","ye
//14
    float processor[50]={2,2.65,2.7,2.3,2,1.5,1.3,1.8,2,2.2,2.65,2.65,2.2,2.3,2.35,2.35,1.8,2.3,2.0,2.2,2.0,1.8,2.0,2.3,2.7,2.73,2.73,2.95,2.3
//15
    char fcharge[50][4]={"no","yes","yes","yes","yes","no","no","no","no","no","yes","yes","yes","yes","no","no","yes","yes","yes","no","no",
//16
    char OS[50][10]={"Android","ios","Android","Android","Android","Android","Android","Android","Android","ios","ios","Android","And

    char res1[50][100],res2[50][100],res3[50][100],res4[50][100],res5[50][100],res6[50][100],res7[50][100],res8[50][100],res9[50][100],res10[50

    for (count1=0;count1<50;count1++){                                          //This is supposed to assign 0 to all elements o
```

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

```
43
44      for (count1=0;count1<50;count1++){                                   //This is supposed
45          for (count2=0;count2<100;count2++){
46          res1[count1][count2]=0;
47          res2[count1][count2]=0;
48          res3[count1][count2]=0;
49          res4[count1][count2]=0;
50          res5[count1][count2]=0;
51          res6[count1][count2]=0;
52          res7[count1][count2]=0;
53          res8[count1][count2]=0;
54          res9[count1][count2]=0;
55          res10[count1][count2]=0;
56          res11[count1][count2]=0;
57          res12[count1][count2]=0;
58          res13[count1][count2]=0;
59          res14[count1][count2]=0;
60      }
61      }
```

- Then the list for choice is printed

```
62
63      printf("                                >>>>-------Welcome To Advance Search!-------<<<<\n");
64      printf("-------------------------------------------------------------------------------------------------------------------------\n
65      printf("Please Select A Valid Option From The list Provided Below:\n");
66      printf("Prices:\n");                                                //PRICES INPUT!
67      printf("1: <10,000\n");
68      printf("2: 10,000-20,000\n");
69      printf("3: 20,000-30,000\n");
70      printf("4: 30,000-40,000\n");
71      printf("5: 40,000-50,000\n");
72      printf("6: >50,000\n");
73      printf("7: SKIP\n");
74      printf("Input Selected Option: ");
75      scanf("%d",&input1a);
76      while((input1a<1)||(input1a>7)){
77          printf("Error! Please Input Again: ");
78          scanf("%d",&input1a);
79      }
```

- Via ‘if’ conditions, the valid input is processed and the name of the smartphone (which meets the specified criteria) is assigned to the resultant array.

```
    if (input1a==1){
        for(count1=0;count1<50;count1++){
            if (prices[count1]<10000){
            strcpy(res1[count1], names[count1]);
            }
        }
    }
    else if (input1a==2){
        for(count1=0;count1<50;count1++){
            if ((prices[count1]>=10000)&&(prices[count1]<=20000)){
            strcpy(res1[count1], names[count1]);
            }
        }
    }
    else if (input1a==3){
        for(count1=0;count1<50;count1++){
            if ((prices[count1]>=20000)&&(prices[count1]<=30000)){
            strcpy(res1[count1], names[count1]);
            }
        }
    }
    else if (input1a==4){
        for(count1=0;count1<50;count1++){
            if ((prices[count1]>=30000)&&(prices[count1]<=40000)){
            strcpy(res1[count1], names[count1]);
            }
        }
    }
    if (input1a==5){
        for(count1=0;count1<50;count1++){
            if ((prices[count1]>=40000)&&(prices[count1]<=50000)){
            strcpy(res1[count1], names[count1]);
            }
        }       }
    else if (input1a==6){
        for(count1=0;count1<50;count1++){
            if (prices[count1]>50000){
            strcpy(res1[count1], names[count1]);
            }
        }
    }
    else if (input1a==7){
        for(count1=0;count1<50;count1++){
        strcpy(res1[count1], names[count1]);}
    }
```

- The same method is applied for the rest of the inputs

```
    printf("\nRAM:\n");                                                    //RAM INPUT!
    printf("1: 1 GB\n");
    printf("2: 2 GB\n");
    printf("3: 3 GB\n");
    printf("4: 4 GB\n");
    printf("5: 6 GB\n");
    printf("6: 8 GB\n");
    printf("7: SKIP\n");
    printf("Input Selected Option: ");
    scanf("%d",&input2a);
    while((input2a<1)||(input2a>7)){
        printf("Error! Please Input Again: ");
        scanf("%d",&input2a);
    }
    if (input2a==1){
        for (count1=0;count1<50;count1++){
        if (RAM[count1]==1){
            strcpy(res2[count1], names[count1]);
        }
        }
    }
    if (input2a==2){
        for (count1=0;count1<50;count1++){
        if (RAM[count1]==2){
            strcpy(res2[count1], names[count1]);
        }
        }
    }
    if (input2a==3){
        for (count1=0;count1<50;count1++){
        if (RAM[count1]==3){
            strcpy(res2[count1], names[count1]);
        }
        }
    }
    if (input2a==4){
        for (count1=0;count1<50;count1++){
        if (RAM[count1]==4){
            strcpy(res2[count1], names[count1]);
        }
        }
    }
    if (input2a==5){
        for (count1=0;count1<50;count1++){
        if (RAM[count1]==6){
            strcpy(res2[count1], names[count1]);
        }
        }
    }
    if (input2a==6){
```

- 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.

```
    printf("-------------------------------------------------------------------------------------------------------------------------------\n");
    printf("\nYour best Option/s (if available) is/are: \n\n");
for (count1=0;count1<50;count1++){
        if (((strcmp(res1[count1],res2[count1]))==0)&&((strcmp(res1[count1],res3[count1]))==0)&&((strcmp(res1[count1],res4[count1]))==0)&
            puts(res1[count1]);
        flag=1;}
    }
    if(flag!=1)
    printf("There is no phone available right now according to your choice of specifications\nThank You!!\n");

    printf("-------------------------------------------------------------------------------------------------------------------------------\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.

```
873     printf("\nWould you like to compare any two smartphones? Y/N\n");
874     scanf(" %c",&comparison);
875     if ((comparison=='Y')||(comparison=='y')){
876         printf("Please Select The Product From The Given List You Want To Compare Your Selected Phone With (Make Sure You Only Select The Ser
877         for (count1=0;count1<50;count1++){
878             i++;
879             printf("%d: ",i);
880             puts(names[count1]);
881         }
```

- The user will then be asked to enter the serial number of the two smartphone he/she wishes to compare

```
882             printf("-------------------------------------------------------------------------------------------
883             printf("Phone 1: ");
884             scanf("%d",&phone1);
885             printf("Phone 2: ");
886             scanf("%d",&phone2);
887             printf("-------------------------------------------------------------------------------------------
888             phone1--;
889             phone2--;
```

- 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.

```
891     //Comparison of Price
892     if (prices[phone1]>prices[phone2]){                                                    //Comparison of prices of two mobil
893         printf("*)The price of %s is higher than the price of %s\n",names[phone1],names[phone2]);
894     }
895
896     if (prices[phone1]<prices[phone2]){
897         printf("*)The price of %s is higher than the price of %s\n",names[phone2],names[phone1]);
898     }
899     if (prices[phone1]==prices[phone2]){
900         printf("*)The price of %s is same as the price of %s\n",names[phone1],names[phone2]);;
901     }
902
903     //Comparison of Ram
904     if(RAM[phone1]>RAM[phone2]){
905         printf("*)%s has higher RAM than %s\n",names[phone1],names[phone2]);
906     }
907     if(RAM[phone1]<RAM[phone2]){
908         printf("*)%s has higher RAM than %s\n",names[phone2],names[phone1]);
909     }
910     if(RAM[phone1]==RAM[phone2]){
911         printf("*)%s has same RAM as of %s\n",names[phone1],names[phone2]);
912     }
913
914     //Comparison of Rom
915     if(ROM[phone1]>ROM[phone2]){
916         printf("*)%s has higher ROM than %s\n",names[phone1],names[phone2]);
917     }
918     if(ROM[phone1]<ROM[phone2]){
919         printf("*)%s has higher ROM than %s\n",names[phone2],names[phone1]);
920     }
921     if(ROM[phone1]==ROM[phone2]){
922         printf("*)%s has same ROM as of %s\n",names[phone1],names[phone2]);
923     }
924
925     //Comparison of Camera
926     if(camera[phone1]>camera[phone2]){
927         printf("*)%s's camera has higher mega pixels than the camera of %s\n",names[phone1],names[phone2]);
928     }
929     if(camera[phone1]<camera[phone2]){
930         printf("*)%s's camera has higher mega pixels than the camera of %s\n",names[phone2],names[phone1]);
931     }
932     if(camera[phone1]==camera[phone2]){
933         printf("*)%s's camera has same mega pixels as of %s\n",names[phone1],names[phone2]);
934     }
935
936     //Comparison of Screen size
937     if(screen[phone1]>screen[phone2]){
938         printf("*)%s's screen is larger than the screen of %s\n",names[phone1],names[phone2]);
939     }
940     if(screen[phone1]<screen[phone2]){
941         printf("*)%s's screen is larger than the screen of %s\n",names[phone2],names[phone1]);
942     }
```

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. The program gets the job done like any other search engine and allows the user to make most out of their expenditure.