C PROGRAMMING - PROJECT REVIEW

Customer Interest Analysis

Project by Group 3 of ELCA

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PROBLEM STATEMENT :

With the help of this project, companies can run user specific campaigns and provide user-specific offers rather than broadcasting the same offer to all the users.

Customer Interest is a technique in which we divide the customers based on their purchase history, gender, age, interest, etc. It is useful to get this information so that the store can get help in personalized marketing and providing customers with relevant deals. Project

FUNCTIONALITIES

- **Add Purchase Details** : This function gets all the data from user required for analysis
- **Find Most Frequently Purchased Items :** The function to find the most purchased product for the majority of sales
- **Find Most Visited Customer** : To find the predominant audience base for the products

- **Find List Of Items Based On Frequency Count For A Given Age Gender Range** : To find the products that has majority of shares given in a particular customer base
- **Find Age Range Of Customers Who Purchased A Given Item** : To target the specific customers market based on the product sold

SOURCE CODE

```c
#include <unistd.h>
#include <stdio.h>
#include <math.h>
#include "utils.c"

char ITEMS[MAX][10] = {
    "Jersey", "Shirts", "Jeans", "Jackets", "Pants",
        "Coats", "Blazers", "Tuxedo", "Tracks ",
};

typedef struct{
    int age, gender, items[20], items_size;
    char name[30];
    long mobileNumber;
}customer;

// FUNCTION DEFINITIONS
void add_customer(customer customer_data[], int x);
void frequentlyPurchasedItems(customer data[], int size);
void mostVisitedCustomer(customer data[], int size);
void ageRange(customer data[], int size, int item);
void itemsPurchasedInrange(customer customer_data[], int ageMin, int size,
                           int ageMax, int gender);

void newlines(int num);
void tabs(int num);

int lines = 19;
int tab = 7;

int main()
{
    // driver code
    customer customer_data[MAX];
    int option = -1, ageMin, ageMax, N, gender, item;

    system("clear");
    newlines(lines);
    tabs(tab+2);
    printf("Customer Interest Analysis");
    getchar();
```

```c
        switch(option){
            case 1:
                system("clear");
                newlines(lines);
                add_customer(customer_data, N);
                N++;
                break;
            case 2:
                system("clear");
                newlines(lines);
                tabs(tab);
                printf("Press 1 for Male\n");
                tabs(tab);
                printf("Press 2 for Female\n");
                tabs(tab);
                printf("Enter the gender of the customer: ");
                scanf("%i", &gender);
                tabs(tab);
                printf("Enter the age range: ");
                scanf("%i %i", &ageMin, &ageMax);
                getchar();
                itemsPurchasedInrange(customer_data, ageMin, N, ageMax, gender);
                break;
            case 3:
                printf("\n");
                mostVisitedCustomer(customer_data, N);
                break;
            case 4:
                printf("\n");
                frequentlyPurchasedItems(customer_data, N);
                break;
            case 5:
                system("clear");
                newlines(lines);
                tabs(tab);
                printf("Press 1 for Jersey\n");
                tabs(tab);
                printf("Press 2 for Shirt\n");
                tabs(tab);
                printf("Press 3 for Jeans\n");
                tabs(tab);
                printf("Press 4 for Jackets\n");
                tabs(tab);
                printf("Press 5 for Pants\n");
                tabs(tab);
                printf("Press 6 for Coats\n");
                tabs(tab);
                printf("Press 7 for Blazers\n");
                tabs(tab);
                printf("Press 8 for Tuxedo\n");
                tabs(tab);
                printf("Press 9 for Track suit\n");
                tabs(tab);
                printf("Enter the item: ");
                scanf("%i", &item);
                getchar();
                ageRange(customer_data, N, item);
                break;
        }
        getchar();
    }
    return 0;
}
```

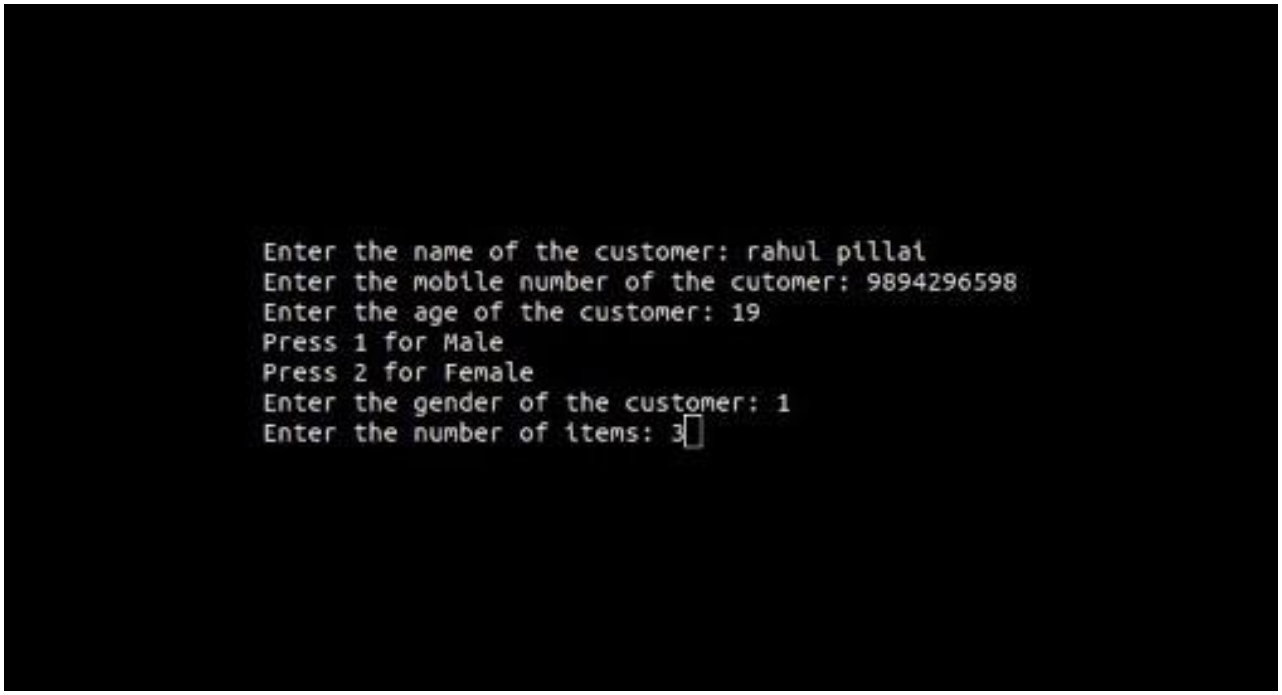
```c
void newlines(int num){
    for(int i=0; i<num; i++){
        printf("\n");
    }
}

void tabs(int num){
    for(int i=0; i<num; i++){
        printf("\t");
    }
}

void mostVisitedCustomer(customer data[], int size){
    long number[MAX], *new_number;
    int k = 0, index = 0, count[MAX]={};
    for(int i=0; i<size; i++){
        number[index++] = data[i].mobileNumber;
    }
    sort(number, index, sizeof(long), compare_long_sort);
    new_number = common(number, sizeof(long), index,  &k, compare_long, count);

    int tab = 9;

    system("clear");
    newlines(lines);
    tabs(tab);

    printf("Most Visited Customer\n\n");
    tabs(tab);
    printf("Name\tVisitation Count\n");
    tabs(tab);
    printf("------------------------\n");

    for(int i=0; i<k; i++){
        for(int j=0; j<size; j++){
            if(new_number[i] == data[j].mobileNumber){
                tabs(tab);
                printf("%s - %i\n", data[j].name, count[i]);
                break;
            }
        }
    }
    free(new_number);
}

void frequentlyPurchasedItems(customer data[], int size){
    int items[MAX], k = 0, index = 0, *new_items, count[MAX]={};
    for(int i=0; i<size; i++){
        for(int j=0; j<data[i].items_size; j++){
            items[index++] = data[i].items[j];
        }
    }
    sort(items, index, sizeof(int), compare_int_sort);
    new_items = common(items, sizeof(int), index,  &k, compare_int, count);

    system("clear");
    newlines(lines);

    int tab = 9;

    tabs(tab);
    printf("Frequently purchased items\n\n");
    tabs(tab);
    printf("Items\t\tCount\n");
    tabs(tab);
    printf("---------------------\n");

    for(int i=0; i<k; i++){
        tabs(tab);
        printf("%s\t   |\t%i\n", ITEMS[new_items[i] - 1], count[i]);
    }
    free(new_items);
}
```

```
void itemsPurchasedInrange(customer customer_data[], int ageMin, int size,
                           int ageMax, int gender){
    int items[MAX], count[MAX] = {}, k = 0, index = 0, *new_items;
    for(int i=0; i<size; i++){
        if(customer_data[i].age >= ageMin &&
           customer_data[i].age <= ageMax &&
           customer_data[i].gender == gender){
            for(int j=0; j<customer_data[i].items_size; j++){
                items[index++] = customer_data[i].items[j];
            }
        }
    }
    sort(items, index, sizeof(int), compare_int_sort);
    new_items = common(items, sizeof(int), index,  &k, compare_int, count);

    system("clear");
    newlines(lines);
    tabs(tab);

    printf("\tFrequently Purchased items based on age and gender\n\n");

    int tab = 9;

    tabs(tab);
    printf("Items\t\tCount\n");
    tabs(tab);
    printf("---------------------\n");

    for(int i=0; i<k; i++){
        tabs(tab);
        printf("%s\t   |\t%i\n", ITEMS[new_items[i] - 1], count[i]);
    }
    free(new_items);
}
```

```c
void add_customer(customer customer_data[], int x){

    tabs(tab);
    printf("Enter the name of the customer: ");
    scanf("%[^\n]%*c", customer_data[x].name);

    tabs(tab);
    printf("Enter the mobile number of the cutomer: ");
    scanf("%ld", &customer_data[x].mobileNumber);

    while(ceil(log10(customer_data[x].mobileNumber)) != 10){
        system("clear");
        newlines(lines);
        tabs(tab);
        printf("Enter a proper 10 digit mobile number: ");
        scanf("%ld", &customer_data[x].mobileNumber);
    }

    tabs(tab);
    printf("Enter the age of the customer: ");
    scanf("%d", &customer_data[x].age);

    tabs(tab);
    printf("Press 1 for Male\n");
    tabs(tab);
    printf("Press 2 for Female\n");
    tabs(tab);
    printf("Enter the gender of the customer: ");
    scanf("%i", &customer_data[x].gender);

    tabs(tab);
    printf("Enter the number of items: ");
    scanf("%i", &customer_data[x].items_size);

    int tab = 9;

    for(int i=0; i<customer_data[x].items_size; i++){
        system("clear");
        newlines(lines);
        tabs(tab);
        printf("Press 1 for Jersey\n");
        tabs(tab);
        printf("Press 2 for Shirt\n");
        tabs(tab);
        printf("Press 3 for Jeans\n");
        tabs(tab);
        printf("Press 4 for Jackets\n");
        tabs(tab);
        printf("Press 5 for Pants\n");
        tabs(tab);
        printf("Press 6 for Coats\n");
        tabs(tab);
        printf("Press 7 for Blazers\n");
        tabs(tab);
        printf("Press 8 for Tuxedo\n");
        tabs(tab);
        printf("Press 9 for Track suit\n");
        tabs(tab);
        printf("Enter the option: ");
        scanf("%i", &customer_data[x].items[i]);
    }
}
```

```c
void ageRange(customer customer_data[], int size, int item){
    int age[MAX], index=0;
    for(int i=0; i<size; i++){
        for(int j=0; j<customer_data[i].items_size; j++){
            if(customer_data[i].items[j] == item){
                age[index++] = customer_data[i].age;
            }
        }
    }
    sort(age, index, sizeof(int), compare_int_sort);

    system("clear");
    newlines(lines);
    tabs(tab+2);

    if(index == 0){
        printf("Cannot find the category, the item is not purchased");
        return;
    }
    printf("Category : %i - %i age", age[0], age[index-1]);
}
```

SAMPLE OUTPUT


Enter the name of the customer: rahul pillai
Enter the mobile number of the cutomer: 9894296598
Enter the age of the customer: 19
Press 1 for Male
Press 2 for Female
Enter the gender of the customer: 1
Enter the number of items: 3


Press 1 for Jersey
Press 2 for Shirt
Press 3 for Jeans
Press 4 for Jackets
Press 5 for Pants
Press 6 for Coats
Press 7 for Blazers
Press 8 for Tuxedo
Press 9 for Track suit
Enter the option: 3

Frequently purchased items

Items	Count
Jersey	2
Shirts	2
Jeans	2

Most Visited Customer

Name	Visitation Count
rahul pillai	2

```
Press 1 for Male
Press 2 for Female
Enter the gender of the customer: 1
Enter the age range: 10 20
```

```
Frequently Purchased items based on age and gender

Items            Count
---------------------
Jersey      |    2
Shirts      |    2
Jeans       |    2
```

```
Category : 19 - 40 age
```