

CMR Engineering College

Name :Heman Babu
Roll no:228r1a62b1
Branch :CMREC
Batch :2022-26

Email :228r1a62b1@cmrec.ac.in
Phone :7989053640
Department :CS
Degree :B.Tech CS

2022-26_I_CS_B_C Programming Lab

C PROGRAMMING LAB_CAT 1

Attempt : 1
Total Mark : 70
Marks Obtained : 64.5

Section 1 : CODING

1. Geetha, a maths teacher rewards her students when she teaches a new topic. Recently Geetha started teaching the number system. She wants the students to convert the decimal number to the binary, octal and hexadecimal equivalents. Raj is a bright student but unfortunately when it comes to rewards. this time he wants to win the reward. So write a suitable code to help him.

Answer

```
#include<stdio.h>
#include<math.h>
int toBin(int num);
int main(){
    int n;
    scanf("%d",&n);
    printf("Binary Value: %d\n",toBin(n));
    printf("Octal Value: %o\n",n);
    printf("Hexadecimal Value: %x",n);
    if(0);
}

int toBin(int num){
```

```

if(num==0) return 0;
int i=0;
int tmp=num;
while((tmp=tmp>>1)!=0) i++;
int result=0;
while(i>=0){
    result+=((num>>i)%2)*(int)pow(10,i);
    i--;
}
return result;
}

```

Status : Partially correct

Marks : 4.5/10

2. The distance between two cities (in km.) is given as an input. Write the program to convert and print this distance in miles and feet.

Sample Output:

Enter the distance between two cities: 50 km.

The distance between the two cities is 50 km or 31.07miles or 164042 foot.

Hint: 1 km is 0.621371mile and 3280.84foot.

Note:Display the output to two decimal places.

Answer

```

#include<stdio.h>
int main(){
    float distance;
    scanf("%f",&distance);
    printf("%.2f miles\n%.2f foot",distance*0.621371,distance*3280.84);
}

```

Status : Correct

Marks : 10/10

3. Simplified Fraction

St. Patrick Convent organizes a project exhibition "Innovative Minds" every

year with an objective to provide the platform and unleash the potential of the students by showcasing their innovative projects. Pasha is a smart high school student and was eager to participate in the fair for the first time.

After a lot of ground works, she decided her project and set out to design the same. Her project requirement was to design an advanced calculator that has a fraction feature that will simplify fractions. The project will accept a non-negative integer as a numerator and a positive integer as a denominator and outputs the fraction in simplest form. That is, the fraction cannot be reduced any further, and the numerator will be less than the denominator.

Help Pasha to program her advanced calculator and succeed in her first ever project presentation. You can assume that all input numerators and denominators will produce valid fractions.

Function Specifications:

Use the function name, return type and the argument type as:

```
void printValue(int,int)
```

The function must display the fraction in simplest form.

Note:

The main function is already provided and well defined. The function mentioned above is to be defined by you to solve this problem.

Answer

```
#include<stdio.h>
void printValue(int a,int b);
void printValue(int a, int b){
    if(a>=b) printf("%d",a/b);
    for(int i=2;i<(a<b?a:b);i++){
        int flag=1;
        for(int j=2;j<i;j++){
            if(i%j==0) {
                flag=0;
                break;
            }
        }
    }
}
```

```

        while(flag){
            if(a%i!=0||b%i!=0) break;
            a/=i;
            b/=i;
        }
    }
    if(a%b==0) return;
    printf(" %d/%d",a%b,b);
    for(;;) return;
}

int main()
{
    int divisor,dividend;
    scanf("%d%d",&dividend,&divisor);
    printValue(dividend,divisor);
    return 0;
}

```

Status : Correct

Marks : 10/10

4. Write a program that calculates mileage remuneration for a salesperson at a rate of Rs.25 per mile. Your program should interact with the user in this manner:

Sample Output:

MILEAGE REMUNERATION CALCULATOR

Enter beginning odometer reading: 13505.2

Enter ending odometer reading: 13810.6

You travelled 305.4 miles. At Rs.25 per mile, your remuneration is Rs.7635

Note: Display the output to two decimal places and round the remuneration value.

Answer

```

#include<stdio.h>
int main(){
    float b,e;

```

```

scanf("%f %f",&b,&e);
printf("%.2f %.0f.00",e-b,25*(e-b));
}

```

Status : Correct

Marks : 10/10

5. Blood group is identified based on three factors namely, two Antibodies (ANTI-A,ANTI-B) in red blood cell decides the blood group and antigens(ANTI-D) in plasma decides +ve or -ve blood. Based on the three values blood group is decided as follows

Get the value for ANTI-A, ANTI-B and ANTI-D from user and find the blood group.

Answer

```

#include<stdio.h>
#include<string.h>
int main(){
    int a,b,d;
    scanf("%d%d%d",&a,&b,&d);
    if(a&&b)    printf("O");
    else if(!a&&b) printf("A");
    else if(a&&!b) printf("B");
    else        printf("AB");

    printf(" %stive",d?"Nega":"Posi");
}

```

Status : Correct

Marks : 10/10

6. Joseph recently joined in a nationalized bank. His daily task is to give the amount to customers. He wants to find the minimum number of notes/ coins required for the given amount. Write a program to input the amount from the user and print the minimum number of notes and coins (Rs.2000, Rs. 500, Rs.200, Rs.100, Rs.50, Rs.20, Rs.10, Rs5, Rs.2, Rs.1) required for the amount.

Answer

```
#include<stdio.h>
int main(){
    int money;
    scanf("%d",&money);
    int denomination[]={2000,500,200,100,50,20,10,5,2,1};
    printf("Denomination");
    for(int i=0;i<10;i++){
        printf("\n%d = %d",denomination[i],money/denomination[i]);
        money%=denomination[i];
    }
    if(0);
}
```

Status : Correct**Marks : 10/10**

7. Hitler decided to declare war on Americans so he decided to build a gun on their own. These guns consist of N pieces of Steel of different length. These must be joined in order to create the gun. The cost to connect two pieces is equal to some of their lengths. To help Hitler write a program that can calculate the lowest possible cost to build the Gun.

Answer

```
#include<stdio.h>
void sort(int *a, int len);
int helpHitler(int *a, int len);
int main(){
    int n;
    scanf("%d",&n);
    int a[n];
    for(int i=0;i<n;i++) scanf("%d",&a[i]);
    sort(a,n);
    printf("%d",helpHitler(a, n));
}
void sort(int *a, int len){
    int result[100];
    for(int i=0; i<len-1; i++){
        for(int j=0; j<len-i-1; j++){
            if(a[j+1]<a[j]){
```

```
        int temp = a[j];
        a[j]=a[j+1];
        a[j+1]=temp;
    }
}
}
```

```
int helpHitler(int *a, int len){
    int totalcost=0;
    int cost=a[0];
    for(int i=1; i<len; i++){
        cost=cost+a[i];
        totalcost+=cost;
    }
    return totalcost;
}
```

Status : Correct

Marks : 10/10