IT161: Introduction to Programming and Problem Solving

Lab 3/Assignment 3

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PROGRAMS

1. **Ramanujan Number Program**

Code:

```c
#include <stdio.h>

int main(){

    int rama_no = 1729;
    int ic,jc,kc,lc;
    //printf("\n 1729 \n");
    int array[4];
    while(rama_no < 20000){

        for(int i = 1; i < 30 ; i++){
            for(int j = 1; j < 30 ; j++){
                for(int k = 1 ; k< 30 ; k++){
                    for(int l = 1 ; l < 30 ; l++){
                        ic = i*i*i;
                        jc = j*j*j;
                        kc = k*k*k;
                        lc = l*l*l;

                        if(i != j && i != k && i !=l && j != k &&
j != l && k != l && i > j && k > l && i > k ){
                            if(ic + jc == kc + lc){

                                rama_no = ic + jc;
                                printf("\n %d \n",ic+jc);
```

```
                            }
                        }

                    }

                }

            }

        }
    }
    return 0;
}
```

Output:

```
Siddharth via ◆ main at …\IT101\LAB3
./a.exe

1729

4104

13832

20683
```

2. **24 Hours of Day with Suffixes**

Code:

```
#include <stdio.h>


int main(){

    int min_24;
    int hour_24;

    do{
        printf("\n Enter Hours & min in 24Hr format: ");
        scanf("%d %d",&hour_24,&min_24);
        if(hour_24 < 24){
```

```
            if(hour_24 >= 12){
                printf("\nThe Current time in 12 hr format is :
%d:%d pm \n",hour_24 - 12,min_24);
            }
            else if(hour_24 <= 12){
                printf("\nThe Current time in 12 hr format is :
%d:%d pm \n",hour_24,min_24);
            }
        }
        else{
            printf("\nInvalid Input!\n");
            }

    }while(hour_24 > 24);

    return 0;
}
```

Output:

```
Siddharth via  main at …\IT101\LAB3
./a.exe

 Enter Hours & min in 24Hr format: 15 37

The Current time in 12 hr format is : 3:37 pm
```

3. **Pattern Output for Input 10**

Code:

```
#include <stdio.h>

int main(){


    int T;
    int row = 1;
    int sum = 1;
```

```c
    printf("\n Enter your Number: ");
    scanf("%d",&T);

    while ((row * (row + 1)) / 2 <= T) {
        row++;
    }
    row--;

    for(int k = 1 ; k <= row ; k++){
        for(int l = 1 ; l <= (row-k) ; l++){
            printf(" ");
        }
        for(int q = 1 ; q <= k ; q++){
            printf(" %d",sum);
            sum = sum + 1;
        }
        printf("\n");
    }

    return 0;
    }
```

Output:

```
Siddharth via  main at …\IT101\LAB3
./a.exe

Enter your Number: 10
   1
  2 3
 4 5 6
7 8 9 10
```

4. Grace Marks Calculation Using Switch

Code:

```c
#include <stdio.h>

int main(){

    int class;
    int failNo;

    printf("\n Enter class obtained by student: ");
    scanf("%d",&class);
    printf("\n Enter no of failed subjects by student: ");
    scanf("%d",&failNo);

    switch(class){

    case 1:
        if(failNo > 3){
            printf("\nThe student doesnt get any grace!\n");
        }
        else{
            printf("\n He gets grace marks of 5\n");
        }
        break;
    case 2:
        if(failNo > 2){
            printf("\nThe student doesnt get any grace!\n");
        }
        else{
            printf("\n He gets grace marks of 4\n");
        }
        break;
    case 3:
        if(failNo > 1){
            printf("\nThe student doesnt get any grace!\n");
        }
        else{
            printf("\n He gets grace marks of 5\n");
        }
```

```
        break;
    default:
        printf("\nInvalid!\n");
        break;
    }

    return 0;
}
```

Output:

```
Siddharth via ◆ main at …\IT101\LAB3
./a.exe

Enter class obtained by student: 1

Enter no of failed subjects by student: 2

He gets grace marks of 5
```

5. Combinations of 1, 2, and 3 Using For Loop

Code:

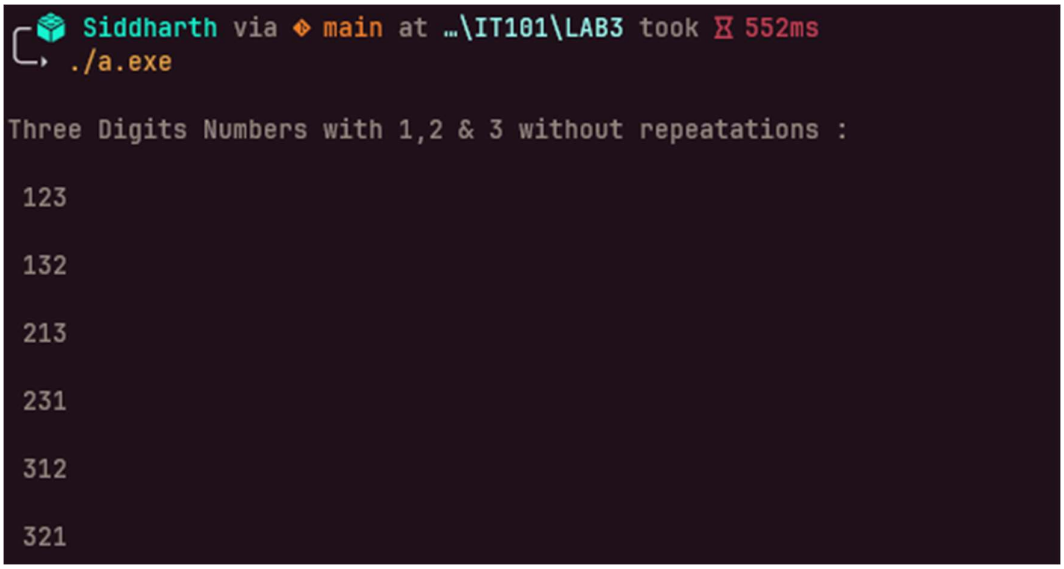
```
#include <stdio.h>

int main(){

    printf("\nThree Digits Numbers with 1,2 & 3 without
repeatations : \n");
    for(int i = 1 ; i <= 3;i++){
        for(int j = 1; j <= 3;j++){
            if(i == j){
                continue;
            }
            else{
                for(int k = 1 ; k <= 3 ; k++){
                    if(j == k || k == i){
                        continue;
                    }
                    else{
```

```
                        printf("\n %d%d%d \n",i,j,k);
                    }
                }
            }
        }
    return 0;
}
```

Output:



6. Menu Driven Program

Code:

```
#include <stdio.h>

int main(){


    int chk;
    int n;

    while(chk != 4){

        printf("\n Select Operations ---> \n");
        printf("\n 1.Factorial");
```

```
        printf("\n 2.Prime");
        printf("\n 3.odd even");
        printf("\n 4.Exit");
        printf("\n Enter(1/2/3/4) : ");
        scanf("%d",&chk);

        switch(chk){

        case 1:
            int fact = 1;
            printf("\n ENnter N: ");
            scanf("%d",&n);

            for(int i = 1; i <= n;i++){
                fact = fact * i;
            }

            printf("\nheres the fact: %d\n",fact);
            break;

        case 2:
            int temp = 0;
            printf("\n ENnter N: ");
            scanf("%d",&n);

            for(int i = 2 ; i < n ; i++){
                if(n % i == 0){
                    temp = temp + 1;
                }
            }
            if(temp != 0){
                printf("\n %d is not a prime number! \n",n);
            }
            else{
                printf("\n %d is a prime number! \n",n);
            }
            break;

        case 3:
            printf("\n ENnter N: ");
            scanf("%d",&n);
            if(n % 2 == 0){
```

```
                printf("\n %d is a even number \n",n);
            }
            else{
                printf("\n %d is a odd number \n",n);
            }
            break;
        default:
            continue;


        }

    }
    return 0;
}
```

Output:

```
Siddharth via ◆ main at …\IT101\LAB3
./a.exe

Select Operations --->

1.Factorial
2.Prime
3.odd even
4.Exit
Enter(1/2/3/4) : 1

ENnter N: 6

heres the fact: 720

Select Operations --->

1.Factorial
2.Prime
3.odd even
4.Exit
Enter(1/2/3/4) :
```