Assignment 1

Shri G.S Institute of Technology & Science

C Programming Lab

Assignment 1 – INDEX

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P1. Write a C program to find maximum between two numbers.

```
#include<stdio.h>

int main(){

        int a, b;

        printf("SHIV ARORA\n");

        printf("Enter Two numbers\n");

        scanf("%d%d", &a, &b);

        if (a > b) printf("%d is the greater number", a);

        else printf("%d is the greater number", b);

        return 0;

}
```

OUTPUT:

```
SHIV ARORA

Enter Two numbers

12 78

78 is the greater number
```

P2. Write a C program to find maximum between three numbers.

```
#include<stdio.h>
int main(){
        int a, b, c;
        printf("SHIV ARORA\n");
        printf("Enter Three numbers\n");
        scanf("%d%d%d", &a, &b, &c);
        if (a > b && a > c) printf("%d is the greater number", a);
        else if (b>a && b>c) printf("%d is the greater number", b);
        else printf("%d is the greater number", c);
        return 0;
}
```

OUTPUT:

```
SHIV ARORA
Enter Three numbers
12 465 745
745 is the greater number is the greater number
```

P3. Write a C program to check whether a number is negative, positive or zero.

```
#include <stdio.h>

int main() {
```

```
    float num;
        printf("SHIV ARORA\n");
    printf("Enter a number: \n");
    scanf("%f", &num);
    if (num > 0) printf("The number is positive.\n");
     else if (num < 0) printf("The number is negative.\n");
     else printf("The number is zero.\n");
    return 0;

}
```

OUTPUT:

SHIV ARORA

Enter a number:

-67

The number is negative.

P4. Write a C program to check whether a number is divisible by 5 and 11 or not.

```
#include <stdio.h>
int main() {
  int num;
        printf("SHIV ARORA\n");
  printf("Enter a number: \n");
  scanf("%d", &num);
  if (num % 5 == 0 && num % 11 == 0) {
    printf("The number is divisible by both 5 and 11.\n");
  } else {
    printf("The number is not divisible by both 5 and 11.\n");
  }
  return 0;
}
```

OUTPUT:

SHIV ARORA

Enter a number:

60

The number is not divisible by both 5 and 11.

P5. Write a C program to check whether a number is even or odd.

```c
#include <stdio.h>
int main() {
  int num;
      printf("SHIV ARORA\n");
  printf("Enter Two number: \n");
  scanf("%d", &num);
  if (num % 2 == 0 ) printf("The number is even\n");
      else printf("The number is odd\n");
  return 0;
}
```

OUTPUT:

SHIV ARORA

Enter Two number:

77

The number is odd

P6. Write a C program to check whether a year is leap year or not.

```c
#include <stdio.h>
int main() {
  int year;
      printf("SHIV ARORA\n");
  printf("Enter a year: ");
  scanf("%d", &year);
  if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
    printf("%d is a leap year.\n", year);
  } else printf("%d is not a leap year.\n", year);
  return 0;
}
```

OUTPUT:

SHIV ARORA

Enter a year: 2005

2005 is not a leap year.

P7. Write a C program to check whether a character is alphabet or not.

```c
#include <stdio.h>
int main() {
   char ch;
        printf("SHIV ARORA\n");
   printf("Enter a character: \n");
   scanf(" %c", &ch);
   if ((ch >= 'A' && ch <= 'Z') || (ch >= 'a' && ch <= 'z')) {
      printf("%c is an alphabet.\n", ch);
   } else printf("%c is not an alphabet.\n", ch);
   return 0;
}
```

OUTPUT:

SHIV ARORA

Enter a character:

f

f is an alphabet.

P8. Write a C program to input any alphabet and check whether it is vowel or consonant.

```c
#include <stdio.h>
int main() {
   char ch;
        printf("SHIV ARORA\n");
   printf("Enter an alphabet:\n ");
   scanf(" %c", &ch);
   if ((ch >= 'A' && ch <= 'Z') || (ch >= 'a' && ch <= 'z')) {
      if (ch == 'A' || ch == 'a' || ch == 'E' || ch == 'e' ||
         ch == 'I' || ch == 'i' || ch == 'O' || ch == 'o' ||
         ch == 'U' || ch == 'u') {
         printf("%c is a vowel.\n", ch);
      } else printf("%c is a consonant.\n", ch);
   } else printf("%c is not an alphabet.\n", ch);
   return 0;
```

        }

OUTPUT:

        SHIV ARORA

        Enter an alphabet:

         u

        u is a vowel.

P9. Write a C program to input any character and check whether it is alphabet, digit or special character.

```
#include <stdio.h>
int main() {
   char ch;
        printf("SHIV ARORA\n");
   printf("Enter a character: \n");
   scanf(" %c", &ch);
   if ((ch >= 'A' && ch <= 'Z') || (ch >= 'a' && ch <= 'z')) {
      printf("%c is an alphabet.\n", ch);
   } else if (ch >= '0' && ch <= '9') printf("%c is a digit.\n", ch);
        else printf("%c is a special character.\n", ch);
   return 0;
}
```

OUTPUT:

        SHIV ARORA

        Enter a character:

        #

        # is a special character.

P10. Write a C program to check whether a character is uppercase or lowercase alphabet.

```
#include <stdio.h>
int main() {
   char ch;
        printf("SHIV ARORA\n");
   printf("Enter a character: \n");
   scanf(" %c", &ch);
```

```
    if (ch >= 'A' && ch <= 'Z') printf("%c is an uppercase alphabet.\n", ch);
        else printf("%c is a lowercase alphabet.\n", ch);
    return 0;
}
```

OUTPUT:

SHIV ARORA

Enter a character:

Y

Y is an uppercase alphabet.

P11. Write a C program to input week number and print week day.

```
#include <stdio.h>
int main() {
    int weekNumber;
        printf("SHIV ARORA\n");
    printf("Enter week number: \n");
    scanf("%d", &weekNumber);
    if (weekNumber == 1) printf("Day: Sunday\n");
    else if (weekNumber == 2) printf("Day: Monday\n");
    else if (weekNumber == 3)printf("Day: Tuesday\n");
    else if (weekNumber == 4) printf("Day: Wednesday\n");
    else if (weekNumber == 5) printf("Day: Thursday\n");
    else if (weekNumber == 6) printf("Day: Friday\n");
    else if (weekNumber == 7) printf("Day: Saturday\n");
    else printf("Invalid week number.\n");
    return 0;
}
```

OUTPUT:

SHIV ARORA

Enter week number:

4

Day: Wednesday

P12. Write a C program to input month number and print number of days in that month.

```c
#include <stdio.h>
int main() {
    int monthNumber;
        printf("SHIV ARORA\n");
    printf("Enter month number \n");
    scanf("%d", &monthNumber);
    if (monthNumber == 1) printf("January has 31 days.\n");
    else if (monthNumber == 2) printf("February has 28 or 29 days \n");
    else if (monthNumber == 3) printf("March has 31 days.\n");
    else if (monthNumber == 4) printf("April has 30 days.\n");
    else if (monthNumber == 5) printf("May has 31 days.\n");
    else if (monthNumber == 6) printf("June has 30 days.\n");
    else if (monthNumber == 7) printf("July has 31 days.\n");
    else if (monthNumber == 8) printf("August has 31 days.\n");
    else if (monthNumber == 9) printf("September has 30 days.\n");
    else if (monthNumber == 10) printf("October has 31 days.\n");
    else if (monthNumber == 11) printf("November has 30 days.\n");
    else if (monthNumber == 12) printf("December has 31 days.\n");
    else printf("Invalid month number\n");
    return 0;
}
```

OUTPUT:

SHIV ARORA

Enter month number

6

June has 30 days.

P13. Write a C program to count total number of notes in given amount.

```c
#include <stdio.h>
int main() {
    int amount;
    int notes2000, notes500, notes100, notes50, notes20, notes10, notes5, notes1 = 0;
        printf("SHIV ARORA\n");
```

```
printf("Enter the total amount: ");
scanf("%d", &amount);


    if (amount >= 2000) {
   notes2000 = amount / 2000;

   amount %= 2000;

   if (notes2000 > 0) printf("2000 notes: %d\n", notes2000);

}
    if (amount >= 500) {
   notes500 = amount / 500;

   amount %= 500;

   if (notes500 > 0)printf("500 notes: %d\n", notes500);

}


if (amount >= 100) {

   notes100 = amount / 100;

   amount %= 100;

   if (notes100 > 0) printf("100 notes: %d\n", notes100);

}


if (amount >= 50) {

   notes50 = amount / 50;

   amount %= 50;

   if (notes50 > 0) printf("50 notes: %d\n", notes50);

}


if (amount >= 20) {

   notes20 = amount / 20;

   amount %= 20;

   if (notes20 > 0) printf("20 notes: %d\n", notes20);

}


if (amount >= 10) {

   notes10 = amount / 10;
```

```
        amount %= 10;
        if (notes10 > 0) printf("10 notes: %d\n", notes10);
    }


    if (amount >= 5) {
        notes5 = amount / 5;
        amount %= 5;
        if (notes5 > 0) printf("5 notes: %d\n", notes5);
    }


    notes1 = amount;
    if (notes1 > 0) printf("1 notes: %d\n", notes1);


    return 0;
}
```

OUTPUT:

SHIV ARORA

Enter the total amount: 4532

2000 notes: 2

500 notes: 1

20 notes: 1

10 notes: 1

1 notes: 2

P14. Write a C program to input angles of a triangle and check whether triangle is valid or not.

```
#include <stdio.h>
int main() {
    int angle1, angle2, angle3;
        printf("SHIV ARORA\n");
    printf("Enter the three angles of the triangle:\n");
    scanf("%d%d%d", &angle1, &angle2, &angle3);
    if (angle1 > 0 && angle2 > 0 && angle3 > 0 && (angle1 + angle2 + angle3 == 180)) {
        printf("The triangle is valid.\n");
    } else printf("The triangle is not valid.\n");
```

```
        return 0;

    }
```

OUTPUT:

SHIV ARORA

Enter the three angles of the triangle:

88 60 32

The triangle is valid.

P15. Write a C program to check whether the triangle is equilateral, isosceles or scalene triangle.

```
#include <stdio.h>
int main() {
    int side1, side2, side3;
        printf("SHIV ARORA\n");
    printf("Enter the lengths of the three sides of the triangle:\n");
    scanf("%d%d%d", &side1, &side2, &side3);
    if (side1 <= 0 || side2 <= 0 || side3 <= 0) {
        printf("Invalid side lengths. All sides must be greater than zero.\n");
    } else if (side1 + side2 > side3 && side1 + side3 > side2 && side2 + side3 > side1) {
        if (side1 == side2 && side2 == side3) {
            printf("The triangle is equilateral.\n");
        } else if (side1 == side2 || side2 == side3 || side1 == side3) {
            printf("The triangle is isosceles.\n");
        } else {
            printf("The triangle is scalene.\n");
        }
    } else {
        printf("The lengths do not form a valid triangle.\n");
    }


    return 0;

    }
```

OUTPUT:

SHIV ARORA

Enter the lengths of the three sides of the triangle:

60 60 60

The triangle is equilateral.

P16. Write a C program to find all roots of a quadratic equation.

```c
#include <stdio.h>
#include <math.h>
int main() {
        int a, b, c;
    float discriminant, root1, root2;
        printf("SHIV ARORA\n");
    printf("Enter coefficients a, b, c: \n");
    scanf("%d %d %d", &a, &b, &c);
    discriminant = b * b - 4 * a * c;
    if (discriminant > 0) {
       root1 = (-b + sqrt(discriminant)) / (2 * a);
       root2 = (-b - sqrt(discriminant)) / (2 * a);
       printf("Roots are real and different: %.2f, %.2f\n", root1, root2);
    } else if (discriminant == 0) {
       root1 = -b / (2 * a);
       printf("Roots are real and the same: %.2f\n", root1);
    } else printf("No real roots exist.\n");
    return 0;
}
```

OUTPUT:

SHIV ARORA

Enter coefficients a, b, c:

4 56 9

Roots are real and different: -0.16, -13.84

P17. Write a C program to calculate profit or loss.

```c
#include <stdio.h>
int main() {
    float costPrice, sellingPrice;
    printf("SHIV ARORA\n");
```

```
        printf("Enter the Cost Price: \n");

        scanf("%f", &costPrice);

        printf("Enter the Selling Price: \n");

        scanf("%f", &sellingPrice);

        if (sellingPrice > costPrice) printf("You made a profit of: %.2f\n", sellingPrice - costPrice);

        else if (sellingPrice < costPrice) printf("You incurred a loss of: %.2f\n", costPrice - sellingPrice);

                else printf("There is no profit or loss.\n");

        return 0;

    }
```

OUTPUT:

SHIV ARORA

Enter the Cost Price:

670

Enter the Selling Price:

999

You made a profit of: 329.00

P18.Write a C program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:

Percentage >= 90%: Grade A, Percentage >= 80%: Grade B,

Percentage >= 70%: Grade C, Percentage >= 60%: Grade D,

Percentage >= 40%: Grade E, Percentage < 40%: Grade F,

```
        #include <stdio.h>

        int main() {

            float physics, chemistry, biology, mathematics, computer;

            float totalMarks, percentage;

            char grade;

                printf("SHIV ARORA\n");

            printf("Enter marks for Physics, Chemistry, Mathematics, Computer Respectively: \n");

            scanf("%f%f%f%f%f", &physics, &chemistry, &biology, &mathematics, &computer);

            totalMarks = physics + chemistry + biology + mathematics + computer;

            percentage = (totalMarks / 500) * 100;

            if (percentage >= 90) grade = 'A';

            else if (percentage >= 80) grade = 'B';
```

```
        else if (percentage >= 70) grade = 'C';

        else if (percentage >= 60) grade = 'D';

        else if (percentage >= 40) grade = 'E';

        else grade = 'F';

        printf("Percentage: %.2f%%\n", percentage);

        printf("Grade: %c\n", grade);

        return 0;

    }
```

<u>OUTPUT:</u>

```
    SHIV ARORA

    Enter marks for Physics, Chemistry, Mathematics, Computer Respectively:

    34 89 99 100 59

    Percentage: 76.20%

    Grade: C
```

P19.Write a C program to input basic salary of an employee and calculate its Gross salary according to following:

Basic Salary <= 10000: HRA = 20%, DA = 80%

Basic Salary <= 20000: HRA = 25%, DA = 90%

Basic Salary > 20000: HRA = 30%, DA = 95%

```
    #include <stdio.h>

    int main() {

        float basicSalary, hra, da, grossSalary;

            printf("SHIV ARORA\n");

        printf("Enter the Basic Salary: \n");

        scanf("%f", &basicSalary);

        if (basicSalary <= 10000) {

            hra = basicSalary * 0.20;

            da = basicSalary * 0.80;

        } else if (basicSalary <= 20000) {

            hra = basicSalary * 0.25;

            da = basicSalary * 0.90;

        } else {

            hra = basicSalary * 0.30;
```

```
        da = basicSalary * 0.95;

    }

    grossSalary = basicSalary + hra + da;

    printf("Gross Salary: %.2f\n", grossSalary);

    return 0;

}
```

OUTPUT:

    SHIV ARORA

    Enter the Basic Salary:

    200000

    Gross Salary: 450000.00

P20. Write a C program to input electricity unit charges and calculate total electricity bill according to the given condition:

For first 50 units Rs. 0.50/unit

For next 100 units Rs. 0.75/unit

For next 100 units Rs. 1.20/unit

For unit above 250 Rs. 1.50/unit

An additional surcharge of 20% is added to the bill

```c
#include <stdio.h>

int main() {

    float units, bill, totalBill;

    printf("SHIV ARORA\n");

    printf("Enter the number of units consumed: \n");

    scanf("%f", &units);

    if (units <= 50) {

        bill = units * 0.50;

    } else if (units <= 150) {

        bill = (50 * 0.50) + ((units - 50) * 0.75);

    } else if (units <= 250) {

        bill = (50 * 0.50) + (100 * 0.75) + ((units - 150) * 1.20);

    } else {

        bill = (50 * 0.50) + (100 * 0.75) + (100 * 1.20) + ((units - 250) * 1.50);

    }
```

```
        totalBill = bill + (bill * 0.20);

        printf("Total Bill: %.2f\n", totalBill);

        return 0;

    }
```

OUTPUT:

SHIV ARORA

Enter the number of units consumed:

4059

Total Bill: 7120.20