# PRACTICAL 03

01. #include <stdio.h>

int main()

{

int n1,n2,max;

printf("Enter the first number:");

scanf("%d",&n1);

printf("Enter the second number:");

scanf("%d",&n2);

if(n1>n2) max=n1;

else

max=n2;

printf ("the highest number is %d\n", max);

}

02. #include<stdio.h>

int main()

{

int n1,n2,n3,max,min;

printf("Enter three numbers");

scanf("%d%d%d",&n1,&n2,&n3);

//larg among n1,n2,n3

if(n1>n2)

if(n1>n3)

max=n1;

else

max=n3;

else

if(n2>n3)

max=n2;

else

max=n3;

//small among n1,n2,n3

if(n1<n2)

if(n1<n3)

min=n1;

else

min=n3;

else

if(n2<n3)

min=n2;

else min=n3;

printf("The largest is %d \n",max);

printf("The smallest is %d \n",min);

}

03. #include<stdio.h>

int main()

{

float basic\_salary , new\_salary , increment ;

char e\_name[20]; printf("Enter employee name :");

scanf("%s" , &e\_name);

printf("Basic salary :");

scanf("%f" ,&basic\_salary);

if(basic\_salary>=10000)

increment = (15\* basic\_salary)/100;

else if(basic\_salary>=5000)

increment = (10\* basic\_salary)/100;

else

increment = (5\* basic\_salary)/100;

new\_salary=basic\_salary + increment; printf("%s - basic salary is %.2f" ,e\_name , new\_salary );

}

04. #include<stdio.h>

int main()

{

const float pi = 3.14159;

float radius,diameter,circumference,area;

//read the radius from user

printf("Enter the radius of the circle:");

scanf("%f",&radius);

//calculate the diameter,circumference,area

diameter=2\*radius;

circumference=2\*pi\*radius;

area=pi\*radius\*radius;

//print the result

printf("Diameter: %.2f\n",diameter); printf("Circumference: %.2f\n",circumference); printf("Area: %.2f\n",area);

}

05. #include<stdio.h> int main()

{

int n1,n2;

printf("Enter the first integer:");

scanf("%d",&n1);

printf("Enter the second integer:"); scanf("%d",&n2);

if (n2!=0 && n1%n2==0)

{

printf("%d is a multiple of %d \n",n1,n2);

}

else {

printf("%d is not a multiple of %d \n",n1,n2);

}

}

06. #include <stdio.h> int main() {

char uppercaseLetters[] = {'A', 'B', 'C'};

char lowercaseLetters[] = {'a', 'b', 'c'};

char digits[] = {'0', '1', '2'}; char specialSymbols[] = {'$', '\*', '+', '/'};

char blankCharacter = ' ';

printf("Integer equivalents of uppercase letters:\n"); for (int i = 0; i < sizeof(uppercaseLetters) / sizeof(uppercaseLetters[0]); i++) { printf("%c: %d\n", uppercaseLetters[i], uppercaseLetters[i]);

}

printf("\nInteger equivalents of lowercase letters:\n"); for (int i = 0; i < sizeof(lowercaseLetters) / sizeof(lowercaseLetters[0]); i++) { printf("%c: %d\n", lowercaseLetters[i], lowercaseLetters[i]);

}

printf("\nInteger equivalents of digits:\n"); for (int i = 0; i < sizeof(digits) / sizeof(digits[0]); i++) { printf("%c: %d\n", digits[i], digits[i]);

}

printf("\nInteger equivalents of special symbols:\n"); for (int i = 0; i < sizeof(specialSymbols) / sizeof(specialSymbols[0]); i++) { printf("%c: %d\n", specialSymbols[i], specialSymbols[i]);

}

printf("\nInteger equivalent of the blank character:\n");

printf("%c: %d\n", blankCharacter, blankCharacter);

}

07. #include<stdio.h>

int main()

{

float basicSalary,monthlySales;

char city;

float additionalAllowance=0; float bonusPercentage=0; float bonusAmount=0; float grossRemuneration=0; printf("Enter the basic salary:"); scanf("%f", &basicSalary); printf("Enter the monthly sales:"); scanf("%f", &monthlySales); printf("Enter the city(C for Colombo):"); scanf("%c", &city);

if(basicSalary>0 && monthlySales>0)

{

if(monthlySales>5)

{additionalAllowance=basicSalary\*0.1;}

if(city=='C')

{additionalAllowance+=2500;} if(monthlySales<=2500) {bonusPercentage=0.1; } else if(monthlySales>25000 && monthlySales<=50000)

{bonusPercentage= 0.12;} else if(monthlySales>50000) {bonusPercentage=0.15;} //calculate bonus amount

bonusAmount=monthlySales\*bonusPercentage;

//calculate gross remuneration grossRemuneration=basicSalary+additionalAllowance+bonusAmount; printf("Gross Monthly Remuneration:%.2f\n",grossRemuneration );

}

else

{printf("Invalid input. Salary and sales amount must be positive.\n");}

}

# PRACTICAL 04

|  |  |
| --- | --- |
| Q1.                          Q2. | #include<stdio.h> int main()  {  int number;  printf("Enter an integer:"); scanf("%d",&number);    if (number % 2==0)  {  printf("%d is an even number.\n", number);  } else  {  printf("%d is an odd number.\n", number);  }  }  #include<stdio.h> |

int main()

{ int choice; double n1, n2; printf("Menu-Driven calculator\n"); printf("1.Addition\n"); printf("2.Subtraction\n"); printf("3.Multiplication\n"); printf("4.Division\n"); printf("Enter your choice (1-4):"); scanf("%d",&choice); printf("Enter two numbers:"); scanf("%lf %lf",&n1,&n2);

if (choice==1)

{

double sum = n1+n2; printf("Result:%.2lf\n",sum);

}

else if (choice==2)

{

double difference=n1-n2; printf("Result:%.2lf\n",difference);

}

else if (choice==3)

{

double product=n1\*n2; printf("Result:%.2lf\n",product);

}

else if (choice==4)

{

if(n2 !=0){ double quotient=n1/n2; printf("Result:%.2lf\n",quotient);

}

else

{

printf("Error: Division by zero is not allowed.\n");

}

}

else

{

printf("Invalid choice. Please select number between 1 and 4.\n");

}

}

#include<stdio.h> #define PI 3.14159 int main()

{ int choice; float radius,result;

printf("Menu:\n");

printf("1. Calculate circumference of the circle\n"); printf("2. Calculate area of the circle\n"); printf("3. Calculate volume of the sphere\n"); printf("Enter your choice(1-3):"); scanf("%d", &choice);

printf("Enter the radius"); scanf("%f",&radius);

if (choice==1)

{

result=2\*PI\*radius;

printf("The circumference of the circle is: %.2f\n", result);

}

else if (choice==2)

{

result=PI\*radius\*radius;

printf("The area of the circle is: %.2f\n", result);

}

else if (choice==3)

{

result=(4.0/3.0)\*PI\*radius\*radius\*radius; printf("The volume of the sphere is: %.2f\n", result);

} else

{ printf("Invalid Choice!\n"); }

}

#include<stdio.h>

int main()

{ char letter; printf("Enter a character:"); scanf("%c",&letter); //using switch statement switch (letter)

{

case'a': case'e': case'i': case'o': case'u': case'A': case'E': case'I': case'O': case'U': printf("The Entered Character is a Vowel.\n");

break; default: printf("The Entered Character is not a Vowel.\n");

break;

}

//using if-else conditional structure

if(letter=='a'|| letter=='e'|| letter=='i'|| letter=='o'|| letter=='u'|| letter=='A'|| letter=='E'|| letter=='I'|| letter=='O'|| letter=='U')

{

printf("The Entered Character is a Vowel.\n");

} else {

("The Entered Character is not a Vowel.\n");

} }

#include<stdio.h>

int main()

{

int month;

// input month number from user printf("Enter month number(1-12):"); scanf("%d", &month); //check the month number

switch(month) {

case 1: printf("January has 31 days.\n"); break; case 2:

printf("February has 28 days.\n"); break; case 3:

printf("March has 31 days.\n"); break;

case 4:

printf("April has 30 days.\n"); break; case 5:

printf("May has 31 days.\n"); break; case 6:

printf("June has 30 days.\n"); break; case 7:

printf("July has 31 days.\n"); break; case 8:

printf("August has 31 days.\n"); break; case 9:

printf("September has 30 days.\n"); break; case 10:

printf("October has 31 days.\n"); break; case11:

printf("November has 30 days.\n"); break; case 12:

printf("December has 31 days.\n"); break;

default:

printf("Invalid month number. Please enter a number between 1 and 12.\n"); break;

}

}

# PRACTICAL 05

## Section A

### Q1. Using a while loop

#include<stdio.h>

int main()

{

int number = 0;

while (number<=100){

printf("%d\n", number);

number++;

}

}

### Using a Do While loop

#include<stdio.h>

int main()

{

int number = 0;

do {

printf("%d\n", number);

number++;

} while (number<=100);

}

### Using a For loop

#include<stdio.h>

int main()

{

for(int number = 0; number<=100; number++)

{

printf("%d\n", number);

}

}

#include<stdio.h> int main()

{

int marks[10], total=0, i; float average;

printf("Enter 10 marks:\n");

//read the marks

for(i=0; i<10; i++){

printf("Mark %d:", i+1);

scanf("%d", &marks[i]); total += marks[i];

}

//calculating the average

average=(float)total/10;

printf("Total Marks:%d\n", total);

printf("Average: %.2f\n",average);

if (average<50){ printf("Fail!\n");

} else {

printf("Pass!\n");

}

}

#include<stdio.h> int main()

{

int number,i;

unsigned long long factorial=1;

printf("Enter a positive integer:");

scanf("%d",&number);

if (number<0){

printf("Error:Factorial is not defined for negative numbers.\n");

} else {

for(i=1; i<=number; ++i)

{

factorial\*=i;

}

printf("Factorial of %d =%llu\n", number, factorial);

}

}

#include<stdio.h> int main()

{

int number, digit, sum=0; printf("Enter a Number:");

scanf("%d", &number);

while (number>0) {

//get the last digit

digit = number %10; //add the digit to the sun sum += digit;

//remove the last digit

number/=10;

}

printf("Sum of digits:%d\n", sum);

}

#include<stdio.h> int main()

{

int number, reversedNumber=0,remainder; printf("Enter a Number:");

scanf("%d", &number);

//Reversing the digits of the number

do{

//Extracting the last digit

remainder=number%10;

//Bulding the reversed number

reversedNumber\*+remainder;

//Removing the last digit

number /=10;

}

while(number !=0);

printf("Reversed number:%d\n",reversedNumber);

}

int main()

{

int base,exponent, result =1; printf("Enter the base:");

scanf("%d", &base); printf("Enter the exponrnt");

scanf("%d", &exponent);

//calculate the power using a loop for(int i=1; i<=exponent; i++){ result \*= base;

}

printf("%d raised to the power of %d is %d\n", base,exponent,result);

scanf("%d", &base);

}

int main()

{ int n=10;

//number of Fibonacci numbers to be printed int first=0,second=1,next,i;

printf("Fibonacci Series:");

for( i=0; i<n ; i++)

{

if(i<=1)

next=i;

else{

next=first+second; first=second;

second=next;

}

printf("%d", next);

}

}

int isArmstrong(int number){ int originalNumber, remainder,result=0,n=0; //store the original number in a separate variable originalNumber=number; //Count the number of digits while (originalNumber !=0){ originalNumber /= 10;

++n;

}

//calculate the Armstrong number originalNumber=number; while (originalNumber !=0){ remainder=originalNumber %10; result += pow(remainder,n); originalNumber /= 10;

}

//check if the number is Armstrong or not if(result==number)

return 1; else return 0;

}

int main(){ int number; printf("Enter a number:"); scanf("%d", &number);

if(isArmstrong(number)) printf("%d is an Armstrong number.\n", number);

else

printf("%d is not an Armstrong number.\n", number);

}

int main()

{ char letter; printf("ASCII values fot letters A to Z:\n"); for(letter='A'; letter <='Z'; letter++){

printf("%c: %d\n", letter,letter);

}

}

Q10. #include<stdio.h>

int main()

{

int rows;

printf("Enter the number of rows:"); scanf("%d",&rows);

for(int i=1; i<=rows; i++){

for(int j=1; j<=i; j++){

printf("\*"); } printf("\n");

}

}

int isPrime(int number){ if (number <= 1){ return 0;

}

for (int i=2; i\*i<= number; i++){

if(number % i==0){

return 0;

}

}

return 1;

}

int main()

{

int number;

printf("Enter a number:");

scanf("%d", &number);

if(isPrime(number)){ printf("%d is a prime number.\n", number);

}else{

printf("%d is not a prime number.\n", number);

}

}

#include<stdio.h> void printFactors(int number){ printf("Factors of %d:", number); for (int i=1; i<=number; i++)

{

if (number % i ==0){

printf("%d", i);

}

}

printf("\n");

}

int main() {

int number;

printf("Enter an integer:"); scanf("%d", &number);

printFactors(number);

}

Q12.

#include<stdio.h>

int main(){

int number, sum=0;

printf("Enter numbers to add (enter -1 to stop):\n");

while(1){

scanf("%d", &number); if (number == -1) break;

sum += number;

}

printf("sum: %d\n", sum);

}

#include <stdio.h> int main() { int array[10];

int i;

printf("Enter 10 integers:\n"); // Read user inputs for the array

for (i = 0; i < 10; i++) {

printf("Enter element %d: ", i + 1); scanf("%d", &array[i]);

}

// Print the array

printf("\nArray elements are: ");

for (i = 0; i < 10; i++) {

printf("%d ", array[i]);

}

Q14. #include <stdio.h> int countEvenNumbers(int arr[], int size) {

int count = 0;

for (int i = 0; i < size; i++) {

if (arr[i] % 2 == 0) {

count++;

}

}

return count;

}

int main() {

int arr[] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};

int size = sizeof(arr) / sizeof(arr[0]); int evenCount = countEvenNumbers(arr, size);

printf("The count of even numbers in the array is: %d\n", evenCount);

}

## Section B

01. #include <stdio.h> int main() {

int numbers[10];

int positiveCount = 0, negativeCount = 0, zeroCount = 0; printf("Enter 10 numbers:\n");

// Read the numbers

for (int i = 0; i < 10; i++) {

printf("Number %d: ", i+1);

scanf("%d", &numbers[i]);

}

// Counting positive, negative,zero numbers for (int i = 0; i < 10; i++) {

if (numbers[i] > 0)

positiveCount++;

else if (numbers[i] < 0)

negativeCount++; else zeroCount++;

}

// Outputting the results printf("Positive numbers: %d\n", positiveCount); printf("Negative numbers: %d\n", negativeCount); printf("Zerores: %d\n", zeroCount);

}

02.

int marks[10];

int i, sum = 0;

int max = 0, min = 100; printf("Enter the marks of 10 students:\n");

// Read marks  for (i = 0; i < 10; i++) { printf("Student %d: ", i + 1); scanf("%d", &marks[i]);

// Update maximum, minimum marks

if (marks[i] > max)

max = marks[i]; if (marks[i] < min)

min = marks[i];

// Calculate the sum of marks

sum += marks[i];

}

// Calculate the average marks

float average = (float)sum / 10;

printf("\nMaximum marks: %d\n", max);

printf("Minimum marks: %d\n", min);

printf("Average marks: %.2f\n", average);

}

03.

int prices[10];

int sum = 0;

int count = 0;

// Input prices

printf("Enter the prices of 10 items:\n");

for (int i = 0; i < 10; i++) {

printf("Item %d: ", i + 1); scanf("%d", &prices[i]); sum += prices[i];

if (prices[i] > 200) {

count++;

}

}

// Calculate & display average

float average = (float) sum / 10; printf("\nAverage value of an item: %.2f\n", average);

// Display count of items with price > 200

printf("Number of items with price greater than 200: %d\n", count);

}

04.

int employeeNo, count = 0;

float basicSalary;

printf("Enter the employee number and basic salary (enter -999 to end):\n");

while (1) {

scanf("%d", &employeeNo);

if (employeeNo == -999) {

break;

}

scanf("%f", &basicSalary);

if (basicSalary >= 5000) {

count++;

}

}

printf("Number of employees with basic salary >= 5000: %d\n", count);

}

05. #include <stdio.h>

int main() {

int employeeNumber[MAX\_EMPLOYEES]; int hoursWorked[MAX\_EMPLOYEES]; float overtimePayment[MAX\_EMPLOYEES];

int totalEmployees = 0; int overtimeExceeding4000 = 0; printf("Enter employee number (-999 to end): "); scanf("%d", &employeeNumber[totalEmployees]); while (employeeNumber[totalEmployees] != -999 && totalEmployees < MAX\_EMPLOYEES) { printf("Enter hours worked for employee %d: ", employeeNumber[totalEmployees]); scanf("%d", &hoursWorked[totalEmployees]);

// Calculate overtime payment if (hoursWorked[totalEmployees] > 40) { int overtimeHours = hoursWorked[totalEmployees] - 40; int normalHours = hoursWorked[totalEmployees] - overtimeHours;

overtimePayment[totalEmployees] = (normalHours \* OVERTIME\_RATE) + (overtimeHours \* OVERTIME\_RATE\_EXTRA);

} else {

overtimePayment[totalEmployees] = 0;

}

if (overtimePayment[totalEmployees] > 4000) { overtimeExceeding4000++;

}

totalEmployees++; printf("Enter employee number (-999 to end): "); scanf("%d", &employeeNumber[totalEmployees]);

}

printf("\nEmployee\tOvertime Payment\n");

for (int i = 0; i < totalEmployees; i++) {

printf("%d\t\t%.2f\n", employeeNumber[i], overtimePayment[i]);

}

float percentageExceeding4000 = (float) overtimeExceeding4000 / totalEmployees \* 100; printf("\nPercentage of employees whose Overtime Payment exceeds Rs. 4000: %.2f%%\n", percentageExceeding4000);

}