Practical 03

01.

#include <stdio.h>

int main() { int num1, num2;

printf("Enter the first number: "); scanf("%d", &num1); printf("Enter the second number: "); scanf("%d", &num2);

if (num1 > num2) { printf("The highest number is: %d\n", num1);

} else {

printf("The highest number is: %d\n", num2);

}

return 0;

}

02.

#include <stdio.h>

int main() { int num1, num2, num3, max, min;

printf("Enter three numbers: ");

scanf("%d %d %d", &num1, &num2, &num3);

max = num1; // Assume the first number is the largest min = num1; // Assume the first number is the smallest

// Check if the second number is larger than the current max if (num2 > max) { max = num2;

}

// Check if the third number is larger than the current max if (num3 > max) { max = num3;

}

// Check if the second number is smaller than the current min if (num2 < min) { min = num2;

}

// Check if the third number is smaller than the current min if (num3 < min) { min = num3;

}

printf("Largest value: %d\n", max); printf("Smallest value: %d\n", min);

return 0;

}

03.

#include <stdio.h>

int main() {

char employeeName[50]; double basicSalary, newSalary, increment;

printf("Enter employee name: "); scanf("%s", employeeName);

printf("Enter basic salary: "); scanf("%lf", &basicSalary);

if (basicSalary < 5000) { increment = 0.05 \* basicSalary;

} else if (basicSalary >= 5000 && basicSalary < 10000) { increment = 0.10 \* basicSalary;

} else {

increment = 0.15 \* basicSalary;

}

newSalary = basicSalary + increment;

printf("Employee Name: %s\n", employeeName);

printf("New Salary: %.2lf\n", newSalary);

return 0;

}

04.

#include <stdio.h>

int main() { float radius; float diameter, circumference, area;

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

diameter = 2 \* radius; circumference = 2 \* 3.14159 \* radius; area = 3.14159 \* radius \* radius;

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

return 0;

}

05.

#include <stdio.h>

int main() { int num1, num2;

printf("Enter two integers: "); scanf("%d%d", &num1, &num2);

if (num1 % num2 == 0) { printf("%d is a multiple of %d\n", num1, num2);

} else {

printf("%d is not a multiple of %d\n", num1, num2);

}

return 0;

}

06.

#include <stdio.h>

int main() { printf("A = %d\n", 'A'); printf("B = %d\n", 'B'); printf("C = %d\n", 'C'); printf("a = %d\n", 'a'); printf("b = %d\n", 'b'); printf("c = %d\n", 'c'); printf("0 = %d\n", '0'); printf("1 = %d\n", '1'); printf("2 = %d\n", '2'); printf("$ = %d\n", '$'); printf("\* = %d\n", '\*'); printf("+ = %d\n", '+'); printf("/ = %d\n", '/'); printf("blank character = %d\n", ' ');

return 0;

}

07.

#include <stdio.h>

int main() {

float basicSalary, additionalAllowance = 0, bonusPercentage = 0, monthlySales, bonus = 0, grossRemuneration;

printf("Enter the basic salary: "); scanf("%f", &basicSalary);

printf("Enter the monthly sales: ");

scanf("%f", &monthlySales);

if (monthlySales >= 0 && monthlySales <= 25000) { bonusPercentage = 10;

} else if (monthlySales > 25000 && monthlySales <= 50000) { bonusPercentage = 12; } else if (monthlySales > 50000) { bonusPercentage = 15;

}

printf("Is the salesman working in Colombo? (Y/N): "); char location; scanf(" %c", &location);

if (location == 'Y' || location == 'y') { additionalAllowance = 2500;

}

printf("Enter the number of years of service: "); int yearsOfService; scanf("%d", &yearsOfService);

if (yearsOfService > 5) { additionalAllowance += 0.1 \* basicSalary;

}

bonus = (bonusPercentage / 100) \* monthlySales; grossRemuneration = basicSalary + additionalAllowance + bonus; printf("Gross monthly remuneration: %.2f\n", grossRemuneration);

return 0;

}

Practical 04

01.Use If-Else and write a program that reads an integer and determines and prints if the number is even or odd. (i.e. divisible by 2) #include <stdio.h> int main()

{

int number; printf("Enter an integer: ");

scanf("%d", &number); if (number % 2 == 0)

{

printf("%d is even.\n", number);

}

Else

{

printf("%d is odd.\n", number);

}

return 0;

}

Re-write the above program using a switch statement instead of an If-Else statement!

#include <stdio.h> int main()

{

int number;

printf("Enter an integer: ");

scanf("%d", &number); switch (number % 2)

{

case 0: printf("%d is even.\n", number); break; case 1: printf("%d is odd.\n", number); break;

}

return 0;

}

02.Write a simple menu driven calculator to perform (+ - / \*) operations. (The program must display a menu to select the desired operator.)

#include <stdio.h> int main()

{

int choice; float num1, num2, result; printf("Menu:\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("%f %f", &num1, &num2); switch (choice)

{

case 1:

result = num1 + num2; printf("Result: %.2f\n", result); break; case 2:

result = num1 - num2;

printf("Result: %.2f\n", result); break; case 3:

result = num1 \* num2;

printf("Result: %.2f\n", result); break; case 4:

if (num2 != 0)

{

result = num1 / num2; printf("Result: %.2f\n", result);

}

Else

{

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

}

break; default:

printf("Invalid choice.\n");

}

}

03.Create a text-based, menu-driven program that allows the user to choose whether to calculate the circumference of a circle, the area of a circle or the volume of a sphere. The program should then input a radius from the user, perform the appropriate calculation and display the result.

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

{

int choice; float radius, result;

printf("Menu:\n"); printf("1. Calculate Circumference of a Circle\n"); printf("2. Calculate Area of a Circle\n"); printf("3. Calculate Volume of a Sphere\n"); printf("Enter your choice (1-3): "); scanf("%d", &choice); printf("Enter the radius: "); scanf("%f", &radius); switch (choice)

{

case 1:

result = 2 \* PI \* radius; printf("Circumference: %.2f\n", result); break; case 2:

result = PI \* radius \* radius; printf("Area: %.2f\n", result); break; case 3:

result = (4.0 / 3.0) \* PI \* radius \* radius \* radius; printf("Volume: %.2f\n", result); break; default:

printf("Invalid choice.\n");

}

return 0;

}

04.Write a C program to read a character from the user and determine whether the given letter is vowel or not. (Use a switch statement which also includes ‘default’ state).

#include <stdio.h> int main()

{

char vowal; printf("Enter a character: "); scanf("%c", &vowal); switch (vowal)

{

case 'a':

printf("vowel\n");break; case 'e': printf("vowel\n");break; case 'i': printf("vowel\n");break; case 'o': printf("vowel\n");break; case 'u': printf("vowel\n");break; default: printf("not a vowel!\n");break;

}

}

05.Write a C program to enter month number and print total number of days in month using switch case. First assume that the given month belongs to a non-leap year.

#include <stdio.h> int main()

{

int month; printf("Enter the month number (1-12): "); scanf("%d", &month); 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; case 11: printf("November has 30 days.\n");break; case 12: printf("December has 31 days.\n");break; default:

printf("Invalid month number.\n");break;

}

return 0;

}

Practical 05

01. Write a C program to print numbers from 0 to 100. (You are required to write 3 separate answers each using While, Do..While, For, looping structures)

• While

#include <stdio.h> int main()

{

int number = 0; while (number <= 100) {

printf("%d ", number); number++;

}

return 0;

}

* Do while #include <stdio.h> int main()

{

int number = 0; do

{

printf("%d ", number); number++;

}

while (number <= 100); return 0;

}

* For #include <stdio.h> int main()

{

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

{

printf("%d ", number);

}

return 0;

}

02. Write a C program to calculate and print the total of 10 marks and the average. If the average is less than 50 program should print “Fail!” otherwise “Pass!”

#include <stdio.h> int main()

{

int marks[10]; int total = 0;

printf("Enter 10 marks:\n"); for (int i = 0; i < 10; i++) {

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

}

float average = (float)total / 10; printf("Total: %d\n", total); printf("Average: %.2f\n", average); if (average < 50) { printf("Fail!\n");

}

Else

{

printf("Pass!\n");

}

return 0;

}

03.

Write a C program to calculate factorial of a user given number.

Hint:

* Select an appropriate looping structure.
* Factorial of ‘0’ is ‘1’ (0! = 1) o Ex: factorial of number 5 is calculated as 5! = 5\*4\*3\*2\*1

#include <stdio.h> int main()

{

int number;

int factorial = 1; printf("Enter a number: "); scanf("%d", &number);

if (number < 0) { printf("Factorial is not defined for negative numbers.\n");

}

Else

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

{

factorial \*= i;

}

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

4.

}

return 0;

}

04.Write a C program to calculate the sum of all digits of a user given number. If user input 123 your program should output 6. (calculated as 1+2+3)

#include <stdio.h> int main()

{

int number, sum = 0; printf("Enter a number: "); scanf("%d", &number); int remainder; while (number > 0)

{

remainder = number % 10; sum += remainder; number

/= 10;

}

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

5.

return 0;

}

05.Write a C program to reverse the digits of a number using do-while statement. #include <stdio.h> int main()

{

int number, reversedNumber = 0, remainder; printf("Enter a number: "); scanf("%d", &number);

do { remainder = number % 10; reversedNumber = reversedNumber \* 10 + remainder; number = number / 10; } while (number != 0); printf("Reversed number: %d\n", reversedNumber); return 0;

}