ASSIGNMENT

Q1-Write a C program for calculating the price of a product after adding the sales tax to its original price. Where rate of tax and price is inputted by user.

Ans –

#include <stdio.h>

int main() {

float taxRate, originalPrice, finalPrice;

printf("Enter the tax rate: ");

scanf("%f", &taxRate);

printf("Enter the original price: ");

scanf("%f", &originalPrice);

finalPrice = originalPrice + (originalPrice \* taxRate / 100);

printf("The final price after adding tax is: %.2f\n", finalPrice);

return 0;

}

Q2- Write a C program to calculate the weekly wages of an employee. The pay depends on wages per hour and number of hours worked. Moreover, if the employee has worked for more than 30 hours, then he or she gets twice the wages per hour, for every extra hour that he or she has worked.

Ans-

#include <stdio.h>

int main() {

double hourly\_wage, hours\_worked, weekly\_wages;

printf("Enter hourly wage: ");

scanf("%lf", &hourly\_wage);

printf("Enter hours worked this week: ");

scanf("%lf", &hours\_worked);

if (hours\_worked <= 30)

{

weekly\_wages = hourly\_wage \* hours\_worked;

}

else

{

double base\_pay = 30 \* hourly\_wage;

double extra\_hours = hours\_worked - 30;

double extra\_pay = 2 \* hourly\_wage \* extra\_hours;

weekly\_wages = base\_pay + extra\_pay;

}

printf("Weekly wages: $%.2lf\n", weekly\_wages);

return 0;

}

Q3-Mr. X goes to market for buying some fruits and vegetables. He is having a currency of Rs 500 with him for marketing. From a shop, he purchases 2.0 kg Apple priced Rs. 50.0 per kg, 1.5 kg Mango priced Rs.35.0 per kg, 2.5 kg Potato priced Rs.10.0 per kg, and 1.0 kg Tomato priced Rs.15 per kg. He gives the currency of Rs. 500 to the shopkeeper. Find out the amount shopkeeper will return to X by writing a C program.

Ans-

#include <stdio.h>

int main() {

float applePrice = 50.0;

float mangoPrice = 35.0;

float potatoPrice = 10.0;

float tomatoPrice = 15.0;

float appleQty = 2.0;

float mangoQty = 1.5;

float potatoQty = 2.5;

float tomatoQty = 1.0;

float totalCost = (applePrice \* appleQty) + (mangoPrice \* mangoQty) + (potatoPrice \* potatoQty) + (tomatoPrice \* tomatoQty);

float amountGiven = 500.0;

float change = amountGiven - totalCost;

if (change >= 0)

{

printf("Shopkeeper will return Rs. %.2f to Mr. X\n", change);

}

else

{

printf("Mr. X did not give enough money. He owes Rs. %.2f to the shopkeeper\n", -change);

}

return 0;

}

Q4-Write a C program to print your name, date of birth and mobile number in 3 different lines.

Ans-

#include <stdio.h>

int main() {

printf("Name: Sarthak Awasthi \n");

printf("Date of Birth: 7/08/2005\n");

printf("Mobile Number: 9415247075\n");

return 0;

}

Q5-.Write a program to read an integer, a character and a float value from keyboard and display the same in different lines on the screen.

Ans-

#include <stdio.h>

int main() {

int integerInput;

char charInput;

float floatInput;

printf("Enter an integer: ");

scanf("%d", &integerInput);

printf("Enter a character: ");

scanf(" %c", &charInput);

printf("Enter a float: ");

scanf("%f", &floatInput);

printf("You entered:\n");

printf("Integer: %d\n", integerInput);

printf("Character: %c\n", charInput);

printf("Float: %.2f\n", floatInput);

return 0;

}

Q6-Write a program to print the following line ( Assume the total value is contained in a variable named cost).The sales total is : $ 172.53

Ans-

#include <stdio.h>

int main() {

double cost = 172.53;

printf("The sales total is : $ %.2lf .\n", cost);

return 0;

}

Q7-Raju got 6 and half apples from each of Raghu, Sheenu and Akash. He wants to know how many apples he has in total without adding them. Write a program which could help Raju in doing this.

Ans-

#include <stdio.h>

int main() {

float rajuFromRaghu = 6.5;

float rajuFromSheenu = 6.5;

float rajuFromAkash = 6.5;

float totalApples = rajuFromRaghu + rajuFromSheenu + rajuFromAkash;

printf("Raju has a total of %.1f apples without adding them.\n", totalApples);

return 0;

}

Q8-Write a program that prints the floating point value in exponential format correct to two decimal places.

#include <stdio.h>

int main() {

double number;

printf("Enter a floating-point number: ");

scanf("%lf", &number);

printf("Exponential format: %.2e\n", number);

return 0;

}

Q9-.Write a program to input and print your mobile number (i.e. of 10 digits).

Ans-

#include <stdio.h>

int main() {

long long int mobileNumber;

printf("Enter your 10-digit mobile number: ");

scanf("%lld", &mobileNumber);

if (mobileNumber >= 1000000000 && mobileNumber <= 9955814580)

{

printf("Your mobile number is: %lld\n", mobileNumber);

}

else

{

printf("Invalid input. Please enter a 10-digit mobile number.\n");

}

return 0;

}

Q10-The population of a city is 30000. It increases by 20 % during first year and 30% during the second year. Write a program to find the population after two years?

Ans-

#include <stdio.h>

int main() {

int initialPopulation = 30000;

initialPopulation = initialPopulation + (initialPopulation \* 0.20);

initialPopulation = initialPopulation + (initialPopulation \* 0.30);

printf("Population after two years: %d\n", initialPopulation);

return 0;

}

Q11-Write a program to find the ASCII value of a character.

Ans-

#include <stdio.h>

int main()

{

char character;

printf("Enter a character: ");

scanf("%c", &character);

int asciiValue = character;

printf("The ASCII value of '%c' is %d\n", character, asciiValue);

return 0;

}

Q12-Write a program to calculate salary of an employee, given his basic pay (entered by user), HRA=15% of the basic pay and TA=20% of the basic pay.

Ans-

#include <stdio.h>

int main() {

float basicPay, hra, ta, salary;

printf("Enter the basic pay: ");

scanf("%f", &basicPay);

hra = 0.15 \* basicPay;

ta = 0.20 \* basicPay;

salary = basicPay + hra + ta;

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

return 0;

}

Q13-Write a program to find the slope of a line and angle of inclination that passes through two points P and Q with coordinates (xp, yp) and (xq, yq) respectively.

Ans-

#include <stdio.h>

#include <math.h>

int main() {

float xp, yp, xq, yq, m, A;

printf("Enter the coordinates of point P (xp, yp): ");

scanf("%f%f", &xp, &yp);

printf("Enter the coordinates of point Q (xq, yq): ");

scanf("%f%f", &xq, &yq);

m = (yq - yp) / (xq - xp);

printf("The slope of the line is %f\n", m);

A = atan(m) \* 180 / 3.14;

printf("The angle of inclination is %f degrees\n", A);

return 0;

}

Q14-The SPI (Semester Performance Index) is a weighted average of the grade points earned by a student in all the courses he registered for in a semester. If the grade points associated with the letter grades awarded to a student are g1, g2, g3,…….gk etc. and the corresponding credits are c1, c2, c3,.…..ck, the SPI is given by:

SPI=i=1kcigii=1kci

Where, k is the number of courses for which the candidate remains registered for during the semester/ trimester. Write a program in C to calculate SPI for k =5.

Ans-

#include <stdio.h>

int main() {

float g1, g2, g3, g4, g5, c1, c2, c3, c4, c5, SPI;

printf("Enter the grade points and credits of each course:\n");

scanf("%f%f%f%f%f%f%f%f%f%f", &g1, &c1, &g2, &c2, &g3, &c3, &g4, &c4, &g5, &c5);

SPI = (g1 \* c1 + g2 \* c2 + g3 \* c3 + g4 \* c4 + g5 \* c5) / (c1 + c2 + c3 + c4 + c5);

printf("The Semester Performance Index (SPI) is %.2f\n", SPI);

return 0;

}

Q15-Write a program to calculate the frequency (f) of a given wave with wavelength (λ) and speed (c), where c=λ\*f.

Ans-

#include <stdio.h>

int main()

{

float wavelength, speed, frequency;

printf("Enter the wavelength (λ) in meters: ");

scanf("%f", &wavelength);

printf("Enter the speed (c) in meters per second: ");

scanf("%f", &speed);

frequency = speed / wavelength;

printf("The frequency (f) of the wave is %.2f Hz\n", frequency);

return 0;

}

Q16-A car travelling at 30 m/s accelerates steadily at 5 m/s2 for a distance of 70 m. What is the final velocity of the car?

Ans-

#include <stdio.h>

#include <math.h>

int main() {

float u = 30, a = 5, s = 70, v;

v = sqrt(u \* u + 2 \* a \* s);

printf("The final velocity of the car is %.2f m/s\n", v);

return 0;

}

Q17-A horse accelerates steadily from rest at 4 m/s2 for 3s. (a) What is its final velocity? (b) How far has it travelled?

Ans-

#include <stdio.h>

int main() {

float u = 0, a = 4, t = 3, v, s;

v = u + a \* t;

s = u \* t + (1/2) \* a \* t \* t;

printf("The final velocity of the horse is %.2f m/s\n", v);

printf("The distance travelled by the horse is %.2f meters\n", s);

return 0;

}

Q18-Write a program to find the sum of your four last digit of your university roll number .

Q19- Write a program to initialize your height and weight in cm. and kgs respectively demonstrating compile time initialization and convert them in feets and pounds respectively. Note :- 1 cm = 0.393701inch , 1 Kg = 2.20462

Ans-

#include <stdio.h>

int main() {

float height\_cm = 170;

float weight\_kg = 70;

float height\_inch = height\_cm \* 0.393701;

float weight\_pound = weight\_kg \* 2.20462;

printf("Height: %.2f inches\n", height\_inch);

printf("Weight: %.2f pounds\n", weight\_pound);

return 0;

}

Q20- Code the variable declarations for each of following:

a) A character variable named option.

b) An integer variable sum initialized to 0

c) A floating point variable, product, initialize

Ans- a) char option;

b) int sum = 0;

c) float product = 0.0;

Q21- Write a program that reads nine integers. Display these numbers by printing three numbers in a line separated by commas.

Ans-

#include <stdio.h>

int main()

{

int numbers[9];

printf("Enter nine integers:\n");

for (int i = 0; i < 9; i++) {

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

}

for (int i = 0; i < 9; i++) {

printf("%d", numbers[i])

if (i % 3 != 2) {

printf(", ");

}

else {

printf("\n");

}

}

return 0;

}

Q22-What are header files and what are its uses in C programming?

Ans- In C programming, header files are additional files that contain definitions of different functions and their associated variables. These files In C programming, **header files** are additional files that contain definitions of different functions and their associated variables. These files are imported into a C program using the preprocessor #include statement . Header files typically have a .h extension and contain C function declarations and macro definitions .

To include a header file in your C program, you can use the following syntax:

#include <header\_file\_name.h>

or

#include "header\_file\_name.h"

Q23-What will be the output of following program?

#include<stdio.h>

int main()

{

int num=070;

printf(“%d\t%o\t%x”,num,num,num);

}

Ans- Output= 56 70 38

Q24-What will be the output of following program?

#include <stdio.h>

void main()

{

int x = printf("GLA UNIVERSITY");

printf("%d", x);

}

Ans-Output- GLA UNIVERSITY13

Q25-What are library functions? List any four library functions.

Ans- **Library functions** are pre-written functions that are part of the C standard library. They are used to perform common tasks such as input/output, string handling, and mathematical computations. These functions are already written and tested, so they can be used by programmers to save time and effort in writing code.

Here are four examples of library functions:

1. **printf()**: This function is used to print formatted output to the console. It is defined in the ‘stdio.h ‘ header file.
2. **scanf()**: This function is used to read formatted input from the console. It is also defined in the ‘stdio.h’ header file.
3. **strlen()**: This function is used to determine the length of a string. It is defined in the ‘string.h’ header file.
4. **sqrt()**: This function is used to calculate the square root of a number. It is defined in the ‘math.h’ header file.

There are many more library functions available in C programming, each with its own specific purpose and usage.

Q26-What will be the output of following program?

#include <stdio.h>

void main()

{

int x = printf("C is placement oriented Language") – printf(“Hi”);

printf("%d %o %x", x,x,x);

}

Ans-30 36 1e

Q27-What is the meaning of following statement?

printf(“%d”,scanf(“%d%d”,&a,&b));

Ans- First of all this is the wrong way to write a code.

The statement printf("%d",scanf("%d%d",&a,&b)); is a C programming language statement. It reads two integers from the standard input and stores them in variables a and b. The scanf() function returns the number of values successfully read from the input. The printf() function then prints the value taken from the user to the standard output.

The correct way to write code :-

int a, b;

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

printf("%d", 2);

Q28-What will be the output of following program?

#include <stdio.h>

void main()

{

printf(" \"C %% FOR %% PLACEMENT\"");

}

Ans-Output-"C % FOR % PLACEMENT"

Q29-Suppose distance between GLA University and Delhi is m km (to be entered by user), by BUS you can reach Delhi in 4 hours. Develop a ‘C’ program to calculate speed of bus.

Ans-

#include <stdio.h>

int main() {

float distance, time, speed;

printf("Enter the distance between GLA University and Delhi in kilometers: ");

scanf("%f", &distance);

printf("Enter the time taken to reach Delhi by bus in hours: ");

scanf("%f", &time);

speed = distance / time;

printf("The speed of the bus is %.2f kilometers per hour.\n", speed);

return 0;

}

Q30- In an exam Satyam got 50 marks, Suman got 70 marks and Shyam got 80 marks, Write a ‘C’ program to find average marks of these three participants.

Ans –

#include <stdio.h>

int main() {

int satyam\_marks = 50;

int suman\_marks = 70;

int shyam\_marks = 80;

float average;

average = (satyam\_marks + suman\_marks + shyam\_marks) / 3.0;

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

return 0;

}

Q31. One day, Mohan called Saurav and Sajal and gave some money to them, later he realized that money that was given to Saurav should be given to Sajal and vice-versa. Develop a ‘C’ program to help Mohan so that he can rectify his mistake.

Ans-

#include <stdio.h>

int main()

{

int a, b, c;

printf("Enter the value of a and b: ");

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

printf("Before swapping a = %d and b = %d\n", a, b);

c = a;

a = b;

b = c;

printf("After swapping a = %d and b = %d\n", a, b);

return 0;

}

Q32. One day when I was going for a lunch, suddenly rain started, I was very hungry so started running with speed of 4km/h and it took 3 min to reach mess. Help me to develop a ‘C’ program to calculate distance travelled by me.

Ans-

#include <stdio.h>

int main() {

float speed = 1.11;

int time = 180;

float distance = speed \* time;

printf("You traveled a distance of %.2f meters\n", distance);

return 0;

}

Q33. Can two or more escape sequences such as \n and \t be combined in a single line of program code?

Ans – yes ,two or more escape sequences such as \n and \t be combined in a single line of program code .

For example:-

#include <stdio.h>

int main() {

printf("Hello,\n\tWorld!");

return 0;

}

Output :-

Hello,

World!

Q34. What are comments and how do you insert it in a C program?

Ans - In programming, comments are hints that a programmer can add to make their code easier to read and understand.

There are two ways to add comments in C:

1. Single-line Comments: In C, a single line comment starts with //. It starts and ends in the same line.

For example:

#include <stdio.h>

int main()

{

// print Hello World to the screen

printf("Hello World");

return 0;

}

1. Multi-line Comments: In C programming, there is another type of comment that allows us to comment on multiple lines at once, they are multi-line comments. To write multi-line comments, we use the /\*....\*/ symbol.

For example:

/\* This program takes age input from the user

And, print the value using printf () \*/

#include <stdio.h>

int main()

{

int age;

printf("Enter the age: ");

scanf("%d", &age);

printf("Age = %d", age);

return 0;

}

Q35. What is wrong in this statement? scanf(“%d”,number);

Ans – scanf(“%d”,number); is wrong there should be ‘&’ symbol used after , and before the variable .

Example – scanf(“%d”,&number);

Q36. What will be the output?

#include <stdio.h>

int main()

{

if (sizeof(int) > -1)

printf("Yes");

else

printf("No");

return 0;

}

Ans – output will be No .

Q37. Point out which of the following variable names are invalid:

gross-salary INTEREST , salary of emp , avg. , thereisbookinmysoup

Ans – invalid variables are :-

1. gross-salary INTEREST
2. salary of emp
3. avg.

Q38. Tom works at an aquarium shop on Saturdays. One Saturday, when Tom gets to work, he is asked to clean a 175-gallon reef tank. His first job is to drain the tank. He puts a hose into the tank and starts a siphon. Tom wonders if the tank will finish draining before he leaves work. He measures the amount of water that is draining out and finds that 12.5 gallons drain out in 30 minutes. So, he figures that the rate is 25 gallons per hour. Develop a ‘C’ program to help Tom to calculate time required to completely clean tank.

Ans –

#include <stdio.h>

int main()

{

float volume = 175;

float rate = 25;

float time = volume / rate;

printf("The time required to completely drain the tank is %.2f hours\n", time);

return 0;

}

Q39. The percent y (in decimal form) of battery power remaining x hours after you turn on a laptop computer is y = −0.2 x + 1. Develop a ‘C’ program to calculate after how many hours the battery power is at 75%?

Ans - #include <stdio.h>

int main()

{

float x;

x = (1 - 0.75) / 0.2;

printf("The battery power will be at 75%% after %.2f hours\n", x);

return 0;

}

Q40.Which of the following is used to convert the high level language in machine language in a single go?

a. Compiler b.Interpreter

c. Linker d.Assembler

Ans – a. Compiler

Q 41. What is the format specifier for an Octal Number?

a.%0 b.%d

c. %o d. %e

Ans – c.%o

Q 42. Which format specifier is used to print the exponent value upto 2 decimal places.

a. %e b.%.2f c. %f d.%.2e

Ans – b.%.2f

Q 43. Which of the following is not a basic data type?

a. char

b. array

c. float

d. int

Ans- b.array

Q 44. What is the output of following code?

#include<stdio.h>

void main()

{

int x=0;

x= printf("\"hello\b\"");

printf(“%d”,x);

}

a. hello7 b. “hello”7 c. “hell”8 d. hell8

Ans – c.”hell”8

Q 45. What is the output of following code?

#include<stdio.h>

void main()

{

int b,c=5 ;

int(“%d , %d”, b,c);

}

a. 5, 5 b. 5, 5.000000

c. Garbage, 5.000000 d. Garbage, 5

Ans- there is an error in the code , int() fuction is not used to print the values inplace of int() printf() function is used……….

Q46. Which of the following is an identifier?

a. &fact b. Basic\_pay c. enum d. 1sum

Ans – b Basic\_pay and c.enum

Q 47. What is the output of the following program?

#include<stdio.h>

void main()

{

char x, a=’c’;

x=printf("%c",a);

printf(“%d”,x);

}

a. c1 b. cgarbage

c. 1 c. c

Ans- a. c1

Q48. Perform the following conversion from Decimal to other number as directed-

1. (365.55)10 = (?)2
2. (453.65)10 = (?)8
3. (5164.12)10 = (?)16
4. (23.65)10 = (?)5
5. (772)10 = (?)7

Ans - a) (365.55)10 = (101101101.1001)2

b) (453.65)10 = (1065.52)8

c) (5164.12)10 = (142C.1EB8)16

d) (23.65)10 = (43.1)5

e) (772)10 = (3123)7

Q49. Covert the following numbers to decimal number system-

1. (325.54)6 = (?)10
2. (1001010110101.1110101)2 = (?)10
3. (742.72)8 = (?)10
4. (AC94.C5)16 = (?)10

Ans- a) (325.54)6 = (1953.24)10

b) (1001010110101.1110101)2 = (4797.90625)10

c) (742.72)8 = (490.578125)10

d) (AC94.C5)16 = (44244.7734375)10

Q50. Perform the following conversion from Hexadecimal to other number as directed-

(DB56.CD4)16 = (?)2, (?)8, (?)4

Ans- a) (DB56.CD4)16 = (1101101101010110.1100110101)2

b) (DB56.CD4)16 = (66526632.625)8

c) (DB56.CD4)16 = (3326.D25)4

Q51. Perform the following conversion from octal to other number as directed-

(473.42)8 = (?)2, (?)10, (?)16, (?)5

Ans- a) (473.42)8 = (100111011.100010)2

b) (473.42)8 = (315.625)10

c) (473.42)8 = (1DB.84)16

d) (473.42)8 = (1324.10101)5

Q52. Find the value of A?

1. (23)10 = (17)A
2. (21)16 = (41)A
3. (32)8 = (101)A

Ans- a ) (23)10 = (17)7

B ) (21)16 = (65)4

C ) (32)8 = (65)5

Q53: What will be the output of following program? Assume integer is of 2

void main(){

int a=32770;

printf(“%d”,a);

}

Ans- -32766

Q54: #include <stdio.h>

int main()

{

float c = 5.0;

printf ("Temperature in Fahrenheit is %.2f", (9/5)\*c + 32);

return 0;

}

Ans- Correct program to get approximately exact value :-

#include <stdio.h>

int main()

{

float c = 5.0;

printf("Temperature in Fahrenheit is %.2f", (9.0/5.0)\*c + 32);

return 0;

}

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