**PPS File**

**By Harshbir Singh (ECE A2)**

**Operators in C++**

1. **Arithmetic Operators:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**float a=40,b=50;**

**int c=40,d=50;**

**cout << "a+b = " << a+b << endl;**

**cout << "a-b = " << a-b << endl;**

**cout << "a\*b = " << a\*b << endl;**

**cout << "a/b = " << a/b << endl;**

**cout << "c % d = " << c%d << endl;**

**return 0;**

**}**

**Output:**

**a+b = 90**

**a-b = -10**

**a\*b = 2000**

**a/b = 0.8**

**c % d = 40**

1. **Relational Operator:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int a=40,b=50;**

**cout << "(a > b): " << (a > b) << endl;**

**cout << "(a < b): " << (a < b) << endl;**

**cout << "(a <= b): " << (a <= b) << endl;**

**cout << "(a >= b): " << (a >= b) << endl;**

**cout << "(a == b): " << (a == b) << endl;**

**cout << "(a != b): " << (a != b) << endl;**

**return 0;**

**}**

**Output:**

**(a > b): 0**

**(a < b): 1**

**(a <= b): 1**

**(a >= b): 0**

**(a == b): 0**

**(a != b): 1**

1. **Logical Operator:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int a=40,b=55;**

**if ((a > b) && (b = 50))**

**{**

**cout << "Hello" << endl;**

**}**

**if ((a == 40) || (a < b))**

**{**

**cout << "World!" << endl;**

**}**

**if (!(a > b))**

**{**

**cout << "a is less than b" << endl;**

**}**

**return 0;**

**}**

**Output:**

**World!**

**a is less than b**

1. **Assignment Operators:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int a =6 ,b = 10;**

**cout << "a = " << a << endl;**

**cout << "a += b = " << (a += b) << endl;**

**cout << "a -= b = " << (a -= b) << endl;**

**cout << "a \*= b = " << (a \*= b) << endl;**

**cout << "a /= b = " << (a /= b) << endl;**

**return 0;**

**}**

**Output:**

**a = 6**

**a += b = 16**

**a -= b = 6**

**a \*= b = 60**

**a /= b = 6**

1. **Ternary or Conditional Operators:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int a = 10, b = 60;**

**int result = (a < b) ? b : a;**

**cout << "The greatest number is: " << result << endl;**

**return 0;**

**}**

**Output:**

**The greatest number is: 60**

**Practice Questions**

1. **Write a program to check wheter the alphabet is a consonant or a vowel.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**char ch;**

**cout << "Enter a letter: ";**

**cin >> ch;**

**((ch == 'a') || (ch == 'o') || (ch == 'u') || (ch == 'e') || (ch == 'i'))**

**? cout << ch << " is a vowel!" << endl : cout << ch << " is a consonant!";**

**return 0;**

**}**

**Output:**

**Enter a letter: b**

**b is a consonant!**

1. **Write a program to swap two numbers using a third variable.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int a = 4,b=5,c;**

**cout << "Before swaping:" << endl;**

**cout << "a = " << a << endl;**

**cout << "b = " << b << endl;**

**c = a;**

**a = b;**

**b = c;**

**cout << "After swaping:" << endl;**

**cout << "a = " << a << endl;**

**cout << "b = " << b << endl;**

**return 0;**

**}**

**Output:**

**Before swaping:**

**a = 4**

**b = 5**

**After swaping:**

**a = 5**

**b = 4**

1. **Write a program to enter students record of result in subjects (i.e. Maths, Sci, Punjabi, English). Find the percentage of student.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**float maths,eng,sci,pun;**

**cout << "Enter the marks in Maths(out of 100): ";**

**cin >> maths;**

**cout << "Enter the marks in English(out of 100): ";**

**cin >> eng;**

**cout << "Enter the marks in Punjabi(out of 100): ";**

**cin >> pun;**

**cout << "Enter the marks in Sci(out of 100): ";**

**cin >> sci;**

**float percent;**

**percent = ((maths+sci+eng+pun)/400)\*100;**

**cout << "Percentage of student is: " << percent << endl;**

**return 0;**

**}**

**Output:**

**Enter the marks in Maths(out of 100): 90**

**Enter the marks in English(out of 100): 90**

**Enter the marks in Punjabi(out of 100): 90**

**Enter the marks in Sci(out of 100): 90**

**Percentage of student is: 90**

1. **Write a program to find greater of two numbers using operators.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int a = 45, b = 50;**

**((a > b)) ? cout << "a is greater than b" : cout << "a is smaller than b";**

**return 0;**

**}**

**Output:**

**a is smaller than b**

1. **Write a program to find greater of three numbers.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int a = 45, b = 50 , c = 100;**

**((a > b) && (a > c))**

**? cout << "a is greater" : ((b > a) && (b > c))**

**? cout << "b is greater" : ((c > a) && (c > b))**

**? cout << "c is greater" : cout << "none of them is greater.";**

**return 0;**

**}**

**Output:**

**c is greater**

1. **Write a program to find area, perimeter of a rectangle and area, circumference of a circle.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int l = 100, b = 23, r = 34;**

**cout << "Area of rectangle = " << (l\*b) << " sq. cm" << endl;**

**cout << "Perimeter of rectangle = " << (2\*(l+b)) << " cm" << endl;**

**cout << "Area of circle = " << (3.14\*r\*r) << " sq. cm" << endl;**

**cout << "Circumference of circle = " << (2\*3.14\*r) << " cm" << endl;**

**return 0;**

**}**

**Output:**

**Area of rectangle = 2300 sq. cm**

**Perimeter of rectangle = 246 cm**

**Area of circle = 3629.84 sq. cm**

**Circumference of circle = 213.52 cm**

**Practice Questions**

**(conditional, switch-case and looping statements)**

1. **Write a program to check that a number is even using if statement.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int num;**

**cout << "Enter a number: ";**

**cin >> num;**

**if ((num % 2) == 0)**

**{**

**cout << "It is even!" << endl;**

**}**

**return 0;**

**}**

**Output:**

**Enter a number: 6**

**It is even!**

1. **Write a program to check number is even or odd using if-else statement.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int num;**

**cout << "Enter a number: ";**

**cin >> num;**

**if ((num % 2) == 0)**

**{**

**cout << "It is even!" << endl;**

**}**

**else{**

**cout << "It is odd!" << endl;**

**}**

**return 0;**

**}**

**Output 1:**

**Enter a number: 5**

**It is odd!**

**Output 2:**

**Enter a number: 6**

**It is even!**

1. **Write a program to check number is even or odd or zero using nested if statement.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int num;**

**cout << "Enter a number: ";**

**cin >> num;**

**if (num != 0)**

**{**

**if ((num % 2) == 0)**

**{**

**cout << "It is even!" << endl;**

**}**

**else{**

**cout << "It is odd!" << endl;**

**}**

**}**

**else{**

**cout << "It is zero" << endl;**

**}**

**return 0;**

**}**

**Output 1:**

**Enter a number: 5**

**It is odd!**

**Output 2:**

**Enter a number: 6**

**It is even!**

**Output 3:**

**Enter a number: 0**

**It is zero**

1. **Write a program to find greater of three numbers using if-else ladder.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int a=50,b=40,c=340;**

**if ((a > b) && (a > c))**

**{**

**cout << "a is greater" << endl;**

**}**

**else if ((b > a) && (b > c)){**

**cout << "b is greater" << endl;**

**}**

**else{**

**cout << "c is greater" << endl;**

**}**

**return 0;**

**}**

**Output:**

**c is greater**

1. **Write a program to check prime number using if-else statement.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int num;**

**cout << "Enter a number: ";**

**cin >> num;**

**if ((num < 2))**

**{**

**cout << "It is not a prime number." << endl;**

**}**

**else if ((num == 2) || (num == 3) || (num == 5))**

**{**

**cout << "It is a prime" << endl;**

**}**

**else**

**{**

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

**{**

**if ( num % i == 0 ){**

**cout << "It is not a prime number" << endl;**

**break;**

**}**

**else**

**{**

**cout << "It is a prime number" << endl;**

**break;**

**}**

**}**

**}**

**return 0;**

**}**

**Output 1:**

**Enter a number: 2**

**It is a prime**

**Output 2:**

**Enter a number: 346**

**It is not a prime number**

1. **Write a program to check that a numbers is zero or positive or negative using nested if statement.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int num;**

**cout << "Enter a number: ";**

**cin >> num;**

**if (num != 0)**

**{**

**if (num < 0)**

**{**

**cout << "It is a negative number" << endl;**

**}**

**else{**

**cout << "It is a positive number" << endl;**

**}**

**}**

**else{**

**cout << "It is zero" << endl;**

**}**

**return 0;**

**}**

**Output 1:**

**Enter a number: -2**

**It is a negative number**

**Output 2:**

**Enter a number: 8**

**It is a positive number**

**Output 3:**

**Enter a number: 0**

**It is zero**

1. **Write a program to check months of year using switch-case statements.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int num;**

**cout << "Enter a number: ";**

**cin >> num;**

**switch (num)**

**{**

**case 1:**

**cout << "January" << endl;**

**break;**

**case 2:**

**cout << "February" << endl;**

**break;**

**case 3:**

**cout << "March" << endl;**

**break;**

**case 4:**

**cout << "April" << endl;**

**break;**

**case 5:**

**cout << "May" << endl;**

**break;**

**case 6:**

**cout << "June" << endl;**

**break;**

**case 7:**

**cout << "July" << endl;**

**break;**

**case 8:**

**cout << "August" << endl;**

**break;**

**case 9:**

**cout << "September" << endl;**

**break;**

**case 10:**

**cout << "October" << endl;**

**break;**

**case 11:**

**cout << "November" << endl;**

**break;**

**case 12:**

**cout << "December" << endl;**

**break;**

**default:**

**cout << "Invalid!" << endl;**

**break;**

**}**

**}**

**Output:**

**Enter a number: 8**

**August**

1. **Write a program to check that a year is a leap year.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int num;**

**cout << "Enter a year: ";**

**cin >> num;**

**if ((num % 4) == 0)**

**{**

**cout << "It is a leap year" << endl;**

**}**

**else**

**{**

**cout << "It is not a leap year" << endl;**

**}**

**return 0;**

**}**

**Output:**

**Enter a year: 2024**

**It is a leap year**

1. **Write a program to print numbers from one to ten using for loop.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**for (int i = 1; i <= 10; i++)**

**{**

**cout << i << " ";**

**}**

**return 0;**

**}**

**Output:**

**1 2 3 4 5 6 7 8 9 10**

1. **Write a program to print first ten even numbers using for loop.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**for (int i = 0; i <= 20; i++)**

**{**

**cout << i << " ";**

**++i;**

**}**

**return 0;**

**}**

**Output:**

**0 2 4 6 8 10 12 14 16 18 20**

1. **Write a program print values from one to ten in reverse order using for loop.**

**Code:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**for (int i = 10; i >= 1; i--)**

**{**

**cout << i << " ";**

**}**

**return 0;**

**}**

**Output:**

**10 9 8 7 6 5 4 3 2 1**

1. **Write a program to print first ten numbers using while loop and do-while loop.**

**Code 1:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int num = 1;**

**while (num <= 10)**

**{**

**cout << num << " ";**

**num++;**

**}**

**}**

**Output 1:**

**1 2 3 4 5 6 7 8 9 10**

**Code 2:**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int num = 1;**

**do**

**{**

**cout << num << " ";**

**num++;**

**} while (num <= 10);**

**return 0;**

**}**

**Output 2:**

1. **2 3 4 5 6 7 8 9 10**

**Questions**

1. **Ramesh’s basic salary is input through keyboard and house rent allowance is 20% of basic salary. Write a program to find gross salary. (Gross Sal = Basic Sal + DA + MRA+HRA)**

**#include <iostream>**

**using namespace std;**

**int main(){**

**float basic,hra,da,mra,gross;**

**cout << "Enter salary: ";**

**cin >> basic;**

**hra = 0.20 \* basic;**

**da = 0.40 \* basic;**

**mra = 0.15\*basic;**

**gross = basic + da + hra + mra;**

**cout << "Gross salary: " << gross;**

**return 0;**

**}**

**Output:**

**Enter salary: 50000**

**Gross salary: 87500**

1. **Temperature of city is in Fo is input and write a program to convert the temperature to Co.**

**#include <iostream>**

**using namespace std;**

**int main(){**

**float temp,ctemp;**

**cout << "Enter the temperature in F: ";**

**cin >> temp;**

**ctemp = (temp-32)\*(5/9);**

**cout << "Temperature in C: " << ctemp << endl;**

**return 0;}**

**Output:**

**Enter the temperature in F: 489**

**Temperature in C: 0**

1. **If five digit number is input through keyboard, write a program to calculate the sum of its digits.**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int sum=0,num,m,n;**

**cout << "Enter a five digit number: ";**

**cin >> num;**

**n = num;**

**while (n > 0)**

**{**

**m = n%10;**

**sum += m;**

**n /= 10;**

**}**

**cout << "The sum of five digits is: " << sum << endl;**

**return 0;**

**}**

**Output:**

**Enter a five digit number: 45693**

**The sum of five digits is: 27**

1. **A cashier has currency notes of denomination of (10,50 and 100)** **if amount to be withdrawn is input through keyboard fin the each dinomination the cashier has to give.**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int n100,n50,n10;**

**int amount;**

**cout << "Enter the amount to be withdrawn: ";**

**cin >> amount;**

**n100 = amount / 100;**

**amount = amount % 100;**

**n50 = amount / 50;**

**amount = amount % 50;**

**n10 = amount / 10;**

**amount = amount % 10;**

**cout << "Currency notes given: " << endl;**

**cout << "No. of 100 notes: " << n100 << endl;**

**cout << "No. of 50 notes: " << n50 << endl;**

**cout << "No. of 10 notes: " << n10 << endl;**

**if (amount != 0){**

**cout << "Amount that can not be dinominated is: " << amount<< endl;**

**}**

**return 0;**

**}**

**Output:**

**Enter the amount to be withdrawn: 895**

**Currency notes given:**

**No. of 100 notes: 8**

**No. of 50 notes: 1**

**No. of 10 notes: 4**

**Amount that can not be dinominated is: 5**

1. **Find the absolute value of a number entered through keyboard.**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int num;**

**cout << "Enter a number: ";**

**cin >> num;**

**if (num < 0)**

**{**

**num = -num;**

**}**

**cout << "Absolte value of number is: " << num;**

**return 0;**

**}**

**Output:**

**Enter a number: -9**

**Absolte value of number is: 9**

1. **If the Cost Price and Selling Price of an item is entered, write a program to determine wheter the seller has made profit or loss and how much.**

**#include <iostream>**

**using namespace std;**

**int main(){**

**int cp,sp;**

**cout << "Enter the cost price of the item: ";**

**cin >> cp;**

**cout << "Enter the selling price of the item: ";**

**cin >> sp;**

**if (sp < cp)**

**{**

**cout << "Loss of: ";**

**cout << cp-sp;**

**}**

**else{**

**cout << "Profit of: ";**

**cout << sp-cp;**

**}**

**return 0;**

**}**

**Output:**

**Enter the cost price of the item: 80**

**Enter the selling price of the item: 90**

**Profit of: 10**

1. **Three angles of a triangle are entered , write a program to check whether the triangle is valid or not.**

**#include <iostream>**

**using namespace std;**

**int main(){**

**float a1,a2,a3;**

**cout << "Enter the first angle of triangle: ";**

**cin >> a1;**

**cout << "Enter the second angle of triangle: ";**

**cin >> a2;**

**cout << "Enter the third angle of triangle: ";**

**cin >> a3;**

**float sum = a1+a2+a3;**

**if (sum == 180)**

**{**

**cout << "It is a valid triangle!" << endl;**

**}**

**else{**

**cout << "It is not a valid triangle" << endl;**

**}**

**return 0;**

**}**

**Output:**

**Enter the first angle of triangle: 30**

**Enter the second angle of triangle: 60**

**Enter the third angle of triangle: 90**

**It is a valid triangle!**

1. **A library charges per day fine for a book, for first five days fine is 50 paisa, for 6 – 10 it is ₹ 1 per day and above 10 days it is ₹ 5 per day. If you return a book after 30 days your membership is cancelled. Write a program that a member is late to return the book and display fine and message.**