**Q1**

1. The result of a logical expression cannot be assigned to an int variable. (**false**)
2. In a one-way selection, if a semicolon is placed after the expression in an if statement as if (score >= 60);, the expression in the if statements is always true (**true**)
3. Every if statement must have a corresponding else. (**false**)
4. The expression in the if statement: always evaluates to true (**true**)
5. The expression: **(ch >= ‘A’ && ch <= ‘Z’)** evaluates to false if either **ch < ‘A’** or **ch >= ‘Z’** (**false**)
6. suppose the input is **5.** The output of the code is: Num is Zero (**false**)
7. The expression **!(x > 0)**  is true only if x is a negative number (**true**)
8. In C++, both **!**  And **!=** are logical operators (**false**)
9. The execution of a break statement in a switch statement immediately exits the switch structure (**true**)
10. The expression in a switch statement should evaluate to a value of the simple data type (**true**)

**Q2**

* Evaluate the following expressions:

a. 5 + 6 == 3 + 7 // false

b. 2 \* 6 – 4 >= 9 – 1 // true

c. ‘U’ >= ‘t’ // false

d. ‘A’ <= ‘a’ // true

e. ‘#’ <= ‘+’ // true

f. 6.28 / 3 < 3 – 1.2 // false

* Suppose that x, y and z are int variables, and **x = 10, y = 15**, and **z = 20.** Determine whether the following expressions evaluates to true or false.

a. !(x > 10) // true

b. x <= 5 || y < 15 // true

c. (x != 5) && (y != z) // true

d. x >= z || (x + y >= z) // true

e. (x <= y – 2) && (y >= z) || (z – 2 != 20) // true

* Suppose that **x, y, z**  and **w** are int variables and **x = 3, y = 4, z = 7,**  and **w = 1**. what is the output fo the following stataements?

cout << “x == y: “ << (x == y) << endl; // x == y: false

cout << “x != z: ” << (x != z) << endl; // x != z: true

cout << “y == z – 3: ” << (y == z – 3); // y == z - 3: true

cout << “!(z > w): ” << !(z > w) << endl; // !(z > w): false

cout << “x + y < z: ” << (x + y < z) << endl; // x + y < z: false

* Which of the following are relational operators?
  1. <
  2. <=
  3. =
  4. =!
  5. <>

**Answer: b, d**

* Which of the following are logical (Boolean) operators?
  1. !
  2. !=
  3. $$

**Answer: a**

* Correct the following code so that it prints the correct message:

If (score >= 60)

cout << "You pass." << endl;

else;

cout << "You fail." << endl;

**Answer:**

if (score >= 60)

cout << "You pass." << endl;

else

cout << "You fail." << endl;

* Write a C++ statement that output Male if the gender is ‘M’, Femal if the gender is ‘F’ and invalid gender otherwise

**Answer:**

*char* gender = 'M';

switch (gender){

case 'M': {

cout << "Male" << endl;

} break;

case 'F': {

cout << "Female" << endl;

} break;

default: {

cout << "Invalid" << endl;

} break;

}

* What is the output of the following program ?

*int* myNum = 10;

*int* yourNum = 30;

if (yourNum % myNum == 3){

yourNum = 3;

myNum = 1;

}

else if (yourNum % myNum == 2) {

yourNum = 2;

myNum = 2;

}

else {

yourNum = 1;

myNum = 3;

}

cout << myNum << " " << yourNum << endl;

**Answer: 3 1**

* What is the output of the program in the previous exercise, if **myNum = 5**  and **yourNum = 12**?

**Answer: 2 2**

* What is the output of the previous exercise if **myNum = 30** and **yourNum = 33**?

**Answer: 1 3**

* Suppose that score is an int variable. Consider the following if statement
  1. if (score == 70) cout << “Grade is C” << endl;
  2. if (score = 70) cout << “Grade is C” << endl;
  + What is the output in a and b if the value of score is 70? What is the value of the score after the if statement executes?
  + What is the output in a and b if the value of score is 80? What is the value of the score after the if statement executes?

**Answer:**

* + - **a:**

Grade is C

Grade is C

the value of score is 70

* + - **b:**

Grade is C

the value of score is 80

* Rewrite the following expressions using the conditional operator (?:) assume that all variables are declared properly
  1. if (x >= y)  
      z = x – y;  
     else  
      z = y – x;
  2. if (hours >= 40.0)  
     wages = 40 \* 7.50 + 1.5 \* 7.5 \* (hours – 40);  
     else  
     wages = hours \* 7.50;
  3. if (score >= 60)  
     str = “Pass”;  
     else  
     str = “Fail”;

**Answers:**

* 1. x >= y ? (z = x – y) : (z = y – x);
  2. hours >= 40.0 ? (wages = 40 \* 7.50 + 1.5 \* 7.5 \* (hours – 40)) : (wages = hours \* 7.50);
  3. score >= 60 ? str = “Pass” : str = “Fail”;
* Rewrite the following expressions using an if...else statements. (Assume that the variables are declared properly)
  1. (x < 5) ? y = 10 : y = 20;
  2. (fuel >= 10) ? drive = 150 : drive = 30
  3. (booksBought >= 3) ? discount = 0.15 : discount = 0.0;

**Answers:**

* 1. if (x < 5){  
     y = 10; }  
     else{  
     y = 20; }
  2. if (fuel >= 10){  
     drive = 150; }  
     else {  
     drive = 30; }
  3. if (booksBought >= 3) {  
     discount = 0.15; }  
     else {  
     discount = 0.0; }
* Suppose that you have the following conditional expression. (Assume variable are declared)

(0 < backyard && backyard <= 5000) ? fertilizingCharges = 40.00 : fertilizingCharges = 40.00 + (backyard – 5000) \* 0.01;

* 1. What is the value of fertilizingCharges if the value of the backyard is 3000
  2. What is the value of fertilizingCharges if the value of the backyard is 5000
  3. What is the value of fertilizingCharges if the value of the backyard is 6500

**Answers:**

* 1. fertilizingCharges = 40.00
  2. fertilizingCharges = 40.00
  3. fertilizingCharges = 55.00
* State whether the following are valid switch statements. If not, explain why. Assume that **n** and **digit**  are int variables

*/\*a.\*/* switch(n <= 2){

case 0: cout << "Draw." << endl; break;

case 1: cout << "Win." << endl; break;

case 2: cout << "Lose." << endl; break;

}

*/\*b.\*/* switch(digit / 4){

case 0,

case 1: cout << "low." << endl; break;

case 1, case 2: cout << "middle." << endl; break;

case 3: cout << "high." << endl;

}

*/\*c\*/*switch(n % 6){

case 1:

case 2:

case 3:

case 4:

case 5:

cout << n;

break;

case 0:

cout << endl;

break;

}

*/\*d\*/* switch(n % 10){

case 2:

case 4:

case 6:

case 8:

cout << "Even";

break;

case 1:

case 3:

case 5:

case 7:

cout << "Odd";

break;

}

**Answers:**

* 1. invalid: you cannot use ‘,’ right after “case”
  2. invalud: you canno use ‘,’ right after “case”
  3. valid: but only if the result is 5 and 0 would get the switch do something
  4. valid: but only if the result is 8 and 7 would get the switch do something
* Suppose that alpha is an int variable. Consider the following C++ code.

cin >> alpha;

switch (alpha % 6){

case 0:

alpha --;

break;

case 1: case 2:

alpha = alpha \* 2;

break;

case 3:

break;

case 4:

alpha = alpha - 5;

case 5:

alpha ++;

break;

default:

alpha = alpha / 3;

}

* 1. What is the output if the input is 8
  2. What is the output if the input is 13
  3. What is the output if the input is 17
  4. What is the output if the input is 24

**Answer:**

* + 1. alpha = 16
    2. alpha = 26
    3. alpha = 18
    4. alpha = 23
* In the following code, correct any errors that would prevent the program from compiling or running

Include <iostream>

main()

{

int num1, num2;

bool found;

cout << “Enter two integers: ;

cin >> num1 >> num2;

cout << endl;

if (num1 >= num2) && num2 > 0

switch (num % num2)

{

case 1

found = (num / num2) >= 6;

break;

case 2: case 3:

num1 = num2 / 2;

break;

default:

num2 = num1 \* num2;

}

else

{

found = (2 \* num2 < num1);

if found

cin >> num2

num 1 = num2 – num1;

temp = (num1 + num2) / 10;

if num2

{

num1 = num2;

num2 = temp;

}

cout << num1 << “ ” << num2 << endl;

}

**Answer:**

#include <iostream>

using *namespace* std;

*int* main() {

*int* num1, num2, temp;

*bool* found;

cout << "Enter two integers: ";

cin >> num1 >> num2;

cout << endl;

if (num1 >= num2 && num2 > 0) {

switch (num1 & num2) {

case 1: {

found = (num1 / num2) >= 6;

} break;

case 2:

case 3: {

num1 = num2 / 2;

} break;

default:

num2 = num1 \* num2;

}

}

else {

found = (2 \* num2 < num1);

}

if (found){

cin >> num2;

num1 = num2 - num1;

}

temp = (num1 + num2) / 10;

if (num2){

num1 = num2;

num2 = temp;

}

cout << num1 << ' ' << num2 << endl;

}

* After correcting the code, answer the following questions. (If needed, insert the prompt lines to inform the user for the input)
  1. What is the output if the input is **10 8 6**?
  2. What is the output if the input is **4 9 11**?

**Answers:**

* 1. **6 0**
  2. **9 1**
* Suppose the input is **3**. What is the value of **beta** after the following C++ code executes

cin >> beta;

switch (beta){

case 3:

beta = beta + 3;

case 1:

beta++;

break;

case 5:

beta = beta + 5;

case 4:

beta = beta + 4;

}

**Answer:**

**7**

* Suppose the input is **6.** What is the value of **a** after the following C++ code executes

cin >> a;

if (a > 0)

switch (a) {

case 1:

a = a + 3;

case 3:

a++;

break;

case 6:

a = a + 6;

case 8:

a = a \* 8;

break;

default:

a--;

}

else

a = a + 2;

**Answer:**

96

* Suppose that **str1, str2** and **str3** are **string**  variables, and **str1 = “English”, str2 = “Computer Science”**, and **str3 = “Programming”**. Evaluate the following expressions
  1. str1 >= str2
  2. str1 != “english”
  3. str3 < str2
  4. str2 >= “Chemistry”

**Answers:**

* 1. **true**
  2. **true**
  3. **false**
  4. **true**
* What is the output of the following statements?
  1. if (‘+’ < ‘\*’) cout << “+\*”; cout << “%%” << endl;
  2. if (10 <= 2 \* 5) cout << “10”; cout << “2 \* 5”; cout << endl;
  3. if (‘a’ < ‘A’) cout << ‘a’; cout << ‘A’; cout << endl;
  4. if (“C++” >= “C—”) cout << “C++ << endl; cout << “C—” << endl;
  5. if (“Sam” <= “Tom”) cout << “Sam Tom” << endl; cout << “Tom Sam” << endl;
  6. if (6 == 2 \* 4 – 2) cout << 3 \* 4 / 6 – 8 << endl; cout << “\*\*” << endl;”

**Answers:**

* 1. **%%**
  2. 102 \* 5
  3. A
  4. C--
  5. Tom Sam
  6. -6

\*\*

* What is the output of the following statements?
  1. if ( ‘R’ < ‘$’ && ‘&’ <= ‘#’) cout << “$#”; cout << “R&”; cout << endl;
  2. if (‘4’ > ‘3’ || 2 < -10) cout << “1 2 3 4” << endl; cout << “$$” **<<** endl;
  3. if (“Jack” <= “John” && “Business” >= “Accounting”)  
      cout << “Jack Accounting” << endl;  
      cout << “John Business” << endl;

**Answers:**

* 1. **R&**
  2. **1 2 3 4  
     $$**
  3. **Jack Accounting  
     John Business**
* What is the output of the following program?

#include <iostream>

using *namespace* std;

*int* main() {

*int* x;

*int* a = 265;

cout << (x = 25) << endl; *// 25*

cout << (x == 98) << endl; *// false*

cout << (x > 10) << endl; *// true*

cout << (3 \* x < a) << endl; *// true*

cout << (10 \* x == a - 15) << endl; *// true*

return 0;

}

**Answer:**

**25  
 0**

**1**

**1**

**1**

* What is the output of the following C++ code?

#include <iostream>

using *namespace* std;

*int* main(){

*int* x = 10;

*int* y = 20;

if (x < 20 && y > 20){

x = 2 \* x;

y = y / 2;

cout << x << " " << y << " " << x - y << endl;

}

else {

x = y / x;

cout << x << " " << y << " " << x \* x + y \* y << endl; *// 2 20 404, xD*

}

}

**Answer:**

**2 20 404**

* Suppose that beta is an int variable. Consider the following C++ code

#include <iostream>

#include <cmath>

using *namespace* std;

*int* main(){

*int* beta;

cin >> beta;

switch (beta % 7){

case 0:

case 1:

beta = beta \* beta;

break;

case 2:

beta++;

break;

case 3:

beta = static\_cast<*int*>(sqrt(beta \* 1.0));

break;

case 4:

beta = beta + 4;

case 6:

beta = beta--;

break;

default:

beta = -10;

}

}

1. What is the output if the input is 11?
2. What is the output if the input is 12?
3. What is the output if the input is 0?
4. What is the ouptut if the input is 16?

**Answers:**

* 1. **15**
  2. **-10**
  3. **0**
  4. 17
* Suppose that num is an int variable. Consider the followig C++ code

#include <iostream>

#include <cmath>

using *namespace* std;

*int* main(){

*int* num;

cin >> num;

if (num >= 0)

switch (num){

case 0:

num = static\_cast<*int*>(pow(num, 3.0));

break;

case 2:

num = ++num;

break;

case 4:

num = num - 4;

break;

case 5:

num = num \* 4;

case 6:

num = num / 6;

break;

case 10:

num--;

break;

default:

num = -20;

}

else

num = num + 10;

}

* 1. What is the output if the input is 5?
  2. What is the output if the input is 26?
  3. What is the output if the input is 2?
  4. What is the output if the input is -5?

**Answers:**

* + 1. **3**
    2. **-20**
    3. **3**
    4. **5**
* The following program contains errors. Correct them so that the program will run and output 2 = 21.

#include <iostream>

using *namespace* std;

*const* *int* SECRET = 5

main(){

*int* x, y, w, z;

z = 9;

if z > 10

x = 12; y = 5; w = x + y + SECRET;

else

x = 12; y = 4, w = x + y + SECRET;

cout << "w = " << w << endl;

}

**Answer:**

#include <iostream>

using *namespace* std;

*const* *int* SECRET = 5;

*int* main(){

*int* x, y, w, z;

z = 9;

if (z > 10){

x = 12;

y = 5;

w = x + y + SECRET;

}

else {

x = 12;

y = 4;

w = x + y + SECRET;

}

cout << "w = " << w << endl;

}

* In the following code, correct any errors that would prevent the program from compiling or running

include <iostream>

main()

{

*int* a, b;

*bool* found;

cout << "Enter two integers: ;

cin >> a >> b;

if a > a \*b && 10 < b

found = 2 \* a > b;

else

{

found = 2 \* a < b;

if found

a = 3;

c = 15;

if b

{

b = 0;

a = 1;

}

}

}

**Answer:**

#include <iostream>

using *namespace* std;

*int* main() {

*int* a, b, c;

*bool* found;

cout << "Enter two integers: ";

cin >> a >> b;

if (a > a \* b && 10 < b)

found = 2 \* a > b;

else {

found = 2 \* a < b;

if (found) {

a = 3;

c = 15;

}

if (b) {

b = 0;

a = 1;

}

}

}

**Q3**

* Write a C++ program to ask student to enter his grade then print the result ”pass” or “failed”

#include <iostream>

using *namespace* std;

*int* main(){

*double* grade;

cout << "Enter the grade: ";

cin >> grade;

if (!(grade >= 1 && grade <= 100)){

cout << "grade must be between 1-100" << endl;

return 1;

}

grade >= 50 ? cout << "pass" << endl : cout << "failed" << endl;

}

* Write a C++ program to print the number if the number is devisable by 5

#include <iostream>

using *namespace* std;

*int* main(){

*int* num;

cout << "Enter a number to check if it's devisable by 5: ";

cin >> num;

num % 5 == 0 ? cout << "True" << endl : cout << "False" << endl;

return 0;

}

* (Guess game) write a C++ program to initial value in variable then ask the user to guess the number, if the number which the user guessed is equal to you number, print “you win” else print “you lost”

#include <cstdlib>

#include <ctime>

#include <iostream>

using *namespace* std;

*// An over-kill ? yes*

*int* main() {

srand(time(NULL)); *// seeds the random based on the time*

*int* range = (rand() % 10) + 1; *// so it would change the range every time, it's more fun*

*int* tries = (rand() % 6) + 1; *// the number of tries that you get, also to make it fun*

*int* current\_try = 0;

*int* random\_num = (rand() % range) + 1;

*int* guessed\_num;

cout << "\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_" << endl;

cout << "\_\_\_\_\_\_\_\_\_\_\_Guessing Game\_\_\_\_\_\_\_\_\_\_" << endl;

cout << "\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_" << endl;

cout << "The range: 1-" << range << endl;

cout << "Your total tries: " << tries << endl;

cout << endl;

guess:

cout << "Enter your guess: ";

cin >> guessed\_num;

if (guessed\_num == random\_num) {

cout << "You Win!" << endl;

return 0;

} else {

current\_try++;

if (tries > current\_try) {

cout << "You lost, try again" << endl;

goto guess;

}

else {

cout << "You lost!. You can't play anymore :(" << endl;

return 1;

}

}

}

* Write a C++ program that calculates the rate of student if the grade >= 90 print “Excellent”...etc

#include <iostream>

using *namespace* std;

*int* main(){

*double* grade;

cout << "Enter your Average grade: ";

cin >> grade;

if (!(grade >= 1 && grade <= 100)){

cout << "Grade must be between 1-100" << endl;

return 1;

}

cout << "\nWith for loop: " << endl;

if (grade >= 90)

cout << "Excellent" << endl;

else if (grade >= 75)

cout << "Very good" << endl;

else if (grade >= 65)

cout << "Good" << endl;

else if (grade >= 50)

cout << "Acceptable" << endl;

else

cout << "Failed" << endl;

cout << "\nWith switch: " << endl;

*// I know..I know*

switch (grade >= 90){

case true:

cout << "Excellent" << endl;

break;

case false:

switch (grade >= 75){

case true:

cout << "Very good" << endl;

break;

case false:

switch (grade >= 65){

case true:

cout << "Good" << endl;

break;

case false:

switch (grade >= 50){

case true:

cout << "Acceptable" << endl;

break;

case false:

cout << "Failed" << endl;

break;

}

}

}

}

}

* Write a C++ program that checks the road signals and print the colors for it, prints **stop** if it’s red and **prepare** if yellow and **go** if green

#include <chrono>

#include <thread>

#include <iostream>

#include <string>

using *namespace* std;

*int* main() {

cout << "\033[31m" << "STOP!" << endl;

this\_thread::sleep\_for(chrono::seconds(4));

cout << "\033[33m" << "Prepare" << endl;

this\_thread::sleep\_for(chrono::seconds(2));

cout << "\033[32m" << "GO!" << endl;

this\_thread::sleep\_for(chrono::seconds(1));

return 0;

}

* Wrote a C++ program to solve the second degree equation
* Write a C++ program that scans the state of the atmosphere if it’s hot or cold or cool

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*double* temp;

cout << "Enter the temperature: ";

cin >> temp;

if (temp >= 73)

cout << "Hot!" << endl;

else if (temp >= 12 && temp <= 73)

cout << "Cold!" << endl;

else

cout << "Cool!" << endl;

}

* Write a C++ program that checks if the user enters the dimensions of a sqaure or a rectangle

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*double* height, width;

cout << "Enter the height: ";

cin >> height;

cout << "Enter the width: ";

cin >> width;

if (height == width)

cout << "That's a square" << endl;

else

cout << "That's a rectangular" << endl;

return 0;

}

* Write a C++ program which calculates the age group (chlid, yound, old)

**Answer:**

#include <iostream>

#include <string>

using *namespace* std;

*int* main(){

*int* age;

string age\_group;

cout << "Enter your age: ";

cin >> age;

if (age <= 0){

cout << "You cannot be 0 or below :(" << endl;

return 1;

}

if (age >= 1 && age <= 18)

age\_group = "a child";

else if (age >= 19 && age <= 25)

age\_group = "young";

else

age\_group = "old";

cout << "You are " << age\_group << endl;

}

* Write a C++ program like a calculator for the basic operationsm the user enter two numbers and operation, the program calculate the result. Rewrite the same program with switch

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*double* x, y;

*char* op;

cout << "Enter first number: ";

cin >> x;

cout << "Enter second number: ";

cin >> y;

cout << "Enter the operation: ";

cin >> op;

cout << endl;

if (op == '+')

cout << x << op << y << " = " << x + y << endl;

else if (op == '-')

cout << x << op << y << " = " << x - y << endl;

else if (op == '\*')

cout << x << op << y << " = " << x \* y << endl;

else

cout << "Unknown operation sign" << endl;

switch (op){

case '+':

cout << x << op << y << " = " << x + y << endl;

break;

case '-':

cout << x << op << y << " = " << x - y << endl;

break;

case '\*':

cout << x << op << y << " = " << x \* y << endl;

break;

default:

cout << "Unknown operation" << endl;

}

return 0;

}

* Write a C++ program that calculate the volume of blood if it is a natural between 4 – 6
  1. if less the he’s suffering from a decrease in blood
  2. if more then he has more blood than what he need

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*int* blood\_vol;

cout << "Enter your blood volume: ";

cin >> blood\_vol;

if (4 <= blood\_vol && 6 >= blood\_vol)

cout << "That's good" << endl;

else

cout << "You should go to the hospital" << endl;

return 0;

}

* (Odd or Even) Write a C++program that reads an integer and determines and prints whether it is odd or even

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*int* x;

cout << "Enter a number: ";

cin >> x;

if (x % 2 == 0)

cout << "Even" << endl;

else

cout << "Odd" << endl;

return 0;

}

* (Largest and smallest inegers) Write a C++ program that reads 3 integers and then determines and peints the largest and the smallest integer in the group

**Answer:**

#include <iostream>

using *namespace* std;

*int* getLargest(*const* *int* *a*, *const* *int* *b*) {

if (*a* > *b*)

return *a*;

else

return *b*;

}

*int* getSmallest(*const* *int* *a*, *const* *int* *b*) {

if (*a* < *b*)

return *a*;

else

return *b*;

}

*int* main() {

*int* a, b, c;

*int* largest, smallest;

cout << "Enter three numbers separated by a space (e.g 1 2 3): ";

cin >> a >> b >> c;

largest = getLargest(getLargest(a, b), c);

smallest = getSmallest(getSmallest(a, b), c);

cout << "Largest number: " << largest << endl;

cout << "Smallest number: " << smallest << endl;

return 0;

}

* (Multiples) Write a program that reads two integers and determines and prints if the first is a multiple of the second

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*int* x, y;

cout << "Enter two numbers separated by a space (e.g: 1 2): ";

cin >> x >> y;

if (y == 0){

cout << "The second number cannot be 0" << endl;

return 1;

}

if ( x % y == 0)

cout << x << " is the multiple of " << y << endl;

else

cout << x << " is not the multiple of " << y << endl;

return 0;

}

* Write a C++ program which chekck the entered value (char, number, sign) and print what kind of it

**Answer:**

#include <iostream>

#include <string>

using *namespace* std;

*bool* isNumber(*const* string *str*){

for (*char* ch : *str*){

if (!isdigit(ch))

return false;

}

return true;

}

*bool* isChar(*const* string *str*){

if (*str*.length() == 1 && isalpha(*str*[0]))

return true;

else

return false;

}

*int* main(){

string input;

start:

cout << "Enter a value (char, number, sign): ";

cin >> input;

if (input[0] == '-' || input[0] == '+')

cout << "That's a sign" << endl;

else if (isNumber(input))

cout << "That's numbers" << endl;

else if (isChar(input))

cout << "That a char" << endl;

else{

cout << "That's not valid, try again" << endl;

goto start;

}

}

* Write a single statement that indicates each of the following
  1. Display the message “Enter two numbers”
  2. Assign the sum of variables x, y and z to the p variable
  3. The following condition is to be tested in an if..else selection statement: The current value of variable **m** is greater than twice the current value of **v**
  4. Obtain values for variables **s, r,** and **t** from the keyboard

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*// 1*

cout << "Enter two numbers" << endl;

*// 2*

*int* x = 1, y = 1, z = 1, p;

p = x + y + z;

*// 3*

*int* m = 2, v = 2;

if ((m + m) > v) cout << "Yes" << endl;

*// 4*

*int* s, r, t;

cin >> s >> r >> t;

}

* Write a C++ program that obtain two numbers from the keyboard, and determine and display (if either) is the larger of the two numbers

**Answer:**

#include <iostream>

using *namespace* std;

*int* main() {

*int* x, y;

cout << "Enter two numbers separated by a space (e.g: 1 2): ";

cin >> x >> y;

if (x == y)

cout << x << " and " << y << " are the same values" << endl;

else if (x > y)

cout << x << " is bigger than " << y << endl;

else

cout << y << " is bigger than " << x << endl;

}

* (Salary Calculator) Develop a program that will determine the gross pay for each of serverl empolyees. The company pays “stright time” for the first 40 hours worked by each empolyee and pays “time-and-a-half” for all hours worked excess of 40 hours. You’re given a list of employees of the company, the number of hours each employee worked last week and the hourly rate of each employee. Your program should input this information for each employee, and should determine and display the empolyee’s gross pay. Here is a sample input/output dialog

Enter # of hours worked (-1 to end): 39

Enter hourly rate of the worker ($ 00.00): 10.00

Salary is $ 390.00

**Answer:**

#include <iostream>

#include <string>

#include <vector>

using *namespace* std;

*struct* Employee {

string name;

*double* hoursWorked;

*double* hourlyRate;

*double* grossPay;

};

*double* calcGrossPay(*const* *double* *hrs\_w*, *const* *double* *hrs\_r*) {

*double* pay = *hrs\_w* \* *hrs\_r*;

if (*hrs\_w* > 40)

return pay \* 1.5;

return pay;

}

*int* main() {

vector<Employee> employees;

*int* number\_of\_employees;

string name;

*double* hours\_worked, hourly\_rate;

cout << "How many employees are there (e.g: 5): ";

cin >> number\_of\_employees;

cin.ignore();

cout << endl;

for (*int* i = 1; i <= number\_of\_employees; i++) {

cout << "Enter employee name: ";

getline(cin, name);

cout << "Enter the amount of hours worked (e.g: 20): ";

cin >> hours\_worked;

cout << "Enter the amount of hourly rate (e.g: 13.93): ";

cin >> hourly\_rate;

cout << endl;

cin.ignore();

employees.push\_back(Employee{

name : name,

hoursWorked : hours\_worked,

hourlyRate : hourly\_rate,

grossPay : calcGrossPay(hours\_worked, hourly\_rate)

});

}

cout << endl;

for (*const* Employee employee : employees) {

cout << "Employee: " << employee.name << endl;

cout << "Hours Worked: " << employee.hoursWorked << endl;

cout << "Hourly Rate: $" << employee.hourlyRate << endl;

cout << "Gross Pay: $" << employee.grossPay << endl;

cout << endl;

}

}

* (Palindrime Tester) A palindrome is a number or a text phrase that reads the same backward as forward. For example, each of the following five-digit integers is a palindrome: 12321, 55555, 45554 and 11611. Write a program that reads in a five-digit integer and determines whether or not it;s a palindrome.

**Answer:**

#include <iostream>

#include <string>

#include <algorithm>

using *namespace* std;

*int* main() {

string text;

string text\_rev;

cout << "Enter the value: ";

cin >> text;

text\_rev = text;

reverse(text\_rev.begin(), text\_rev.end());

if (text\_rev == text)

cout << "Valid Palindrome" << endl;

else

cout << "Invalid Palindrome" << endl;

}

* Write a C++ program to check uppercase or lowercase alphabets, once with **if** and other with **switch**

**Answer:**

#include <iostream>

#include <iomanip>

using *namespace* std;

*int* main(){

*char* ch;

cout << "Enter a character: ";

cin >> ch;

if (isupper(ch))

cout << "Character is uppercase" << endl;

else if (islower(ch))

cout << "Character is lowercase" << endl;

else

cout << "Not a character" << endl;

switch ((*bool*)isupper(ch)){

case true:

cout << "Character is uppercase" << endl;

break;

case false:

switch ((*bool*)islower(ch)){

case true:

cout << "Character is lowercase" << endl;

break;

case false:

cout << "Not a character" << endl;

break;

} break;

default:

cout << "?" << endl;

}

}

* Write a C++ program to check entered characters vowel and consonants

**Answer:**

#include <iostream>

#define VOWELS "AEIOUaeiou"

using *namespace* std;

*bool* isVowel(*const* *char* *ch*) { return string(VOWELS).find(*ch*) != string::npos; }

*int* getVowels(*const* string *str*) {

*int* vowel\_counter = 0;

for (*char* ch : *str*) {

if (isVowel(ch))

vowel\_counter++;

}

return vowel\_counter;

}

*int* main() {

string text;

*int* vowels = 0;

cout << "Enter text to check: ";

getline(cin, text);

vowels = getVowels(text);

cout << "Number of Vowels: " << vowels

<< "\nNumber of Consonant: " << (text.length() - vowels) << endl;

}

* Write a C++ program that takes two integers and check if they are equal or not

**Answer:**

#include <iostream>

using *namespace* std;

*int* main() {

*int* a, b;

cout << "Enter two numbers separated by a space (e.g: 1 2): ";

cin >> a >> b;

if (a == b)

cout << "They are equal" << endl;

else

cout << "They aren't equal" << endl;

switch ( a == b){

case true:

cout << "They are equal" << endl;

break;

case false:

cout << "They aren't equal" << endl;

break;

}

}

* Write a C++ program to determine a candidate’s age is eligible for casting the vote or not

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*Int* age;

cout << "Enter your age (e.g: 21): ";

cin >> age;

if (age >= 18)

cout << "Thank you for voting" << endl;

else

cout << "You cannot vote, you are not eligible to vote" << endl;

switch (age >= 18){

case true:

cout << "Thank you for voting" << endl;

break;

case false:

cout << "You cannot vote, you are not eligible to vote" << endl;

break;

}

}

* Write a C++ program to find the eligibility of admission for Colloge of Engineering based on the avgerage

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*double* average;

cout << "Thanks for choosing College of Engineering" << endl;

cout << "Enter you high school average (e.g: 91.38): ";

cin >> average;

cout << endl;

if (average >= 80)

cout << "Welcome" << endl;

else

cout << "You are not acceptable, your average is low" << endl;

switch (average >= 80){

case true:

cout << "Welcome" << endl;

break;

case false:

cout << "You are not acceptable, your average is low" << endl;

break;

}

}

* Write a C++ program to enter month number and print the number of days in that month

**Answer:**

#include <iostream>

#include <vector>

using *namespace* std;

*int* getDays(*const* *int* *month*){

*int* days;

if (*month* == 2){

days = 28;

return days;

}

if (*month* == 4 || *month* == 6 || *month* == 9 || *month* == 11)

days = 30;

else

days = 31;

return days;

}

*int* main(){

*int* month\_number;

cout << "Enter the month number (e.g: 3): ";

cin >> month\_number;

cout << endl;

if (month\_number > 12 || month\_number < 1){

cout << "Can only be between 1-12" << endl;

return 1;

}

cout << "The total days of the month: " << getDays(month\_number) << endl;

}

* Write a C++ program to check whether a triangle can be formed from the given values

**Answer:**

#include <iostream>

using *namespace* std;

*bool* canFormTriangle(*const* *int* *a*, *const* *int* *b*, *const* *int* *c*) {

*/\**

*rules are*

*a + b > c*

*a + c > b*

*b + c > a*

*\*/*

return (*a* + *b* > *c*) && (*a* + *c* > *b*) && (*b* + *c* > *a*);

}

*int* main(){

*int* a, b, c;

cout << "Enter the angles of a triangle separated by spaces (e.g: 4 4 3): ";

cin >> a >> b >> c;

if (canFormTriangle(a, b, c))

cout << "Angles are valid to form a triangle" << endl;

else

cout << "Angles cannot form a triangle" << endl;

}

* Write a C++ program to check wheither a square can be form from given values

**Answer:**

#include <iostream>

using *namespace* std;

*bool* canFormSquare(*const* *int* *a*, *const* *int* *b*, *const* *int* *c*, *const* *int* *d*) {

return (*a* == *b*) && (*b* == *c*) && (*c* == *d*);

}

*int* main(){

*int* a, b, c, d;

cout << "Enter the angles for the square separated by spaces (e.g: 4 4 4 4): ";

cin >> a >> b >> c >> d;

if (canFormSquare(a, b, c , d))

cout << "Angle is valid to form a square" << endl;

else

cout << "Angle cannot form a square" << endl;

}

* Write a C++ program to check whether a rectangle can be formed from given values

**Answer:**

#include <iostream>

using *namespace* std;

*bool* canFormRectangle(*const* *int* *side1*, *const* *int* *side2*, *const* *int* *side3*, *const* *int* *side4*) {

return (*side1* == *side3*) && (*side2* == *side4*);

}

*int* main(){

*int* a, b, c ,d;

cout << "Enter the angles for a rectangular separated by spaces (e.g: 4 2 4 2): ";

cin >> a >> b >> c >> d;

if (canFormRectangle(a, b, c, d))

cout << "Angles are valid to form a rectangle" << endl;

else

cout << "Cannot form a rectangular from given angles" << endl;

}

* Write a C++ program to create a calculator using switch statements

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*double* x, y;

*char* op;

cout << "Enter the equation (e.g: 1 + 2): ";

cin >> x >> op >> y;

switch (op){

case '-':

cout << x << op << y << " = " << x - y << endl;

break;

case '+':

cout << x << op << y << " = " << x + y << endl;

break;

case '/':

cout << x << op << y << " = " << x / y << endl;

break;

case '\*':

cout << x << op << y << " = " << x \* y << endl;

break;

default:

cout << "Invalid operation sign, valid operation: - + / \*" << endl;

}

}

* Write a C++ program to check even or odd using switch case

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*int* x;

cout << "Enter a number (e.g: 2): ";

cin >> x;

switch (x % 2 == 0){

case true:

cout << "Even" << endl;

break;

case false:

cout << "Odd" << endl;

break;

}

}

* Write a C++ program to print the gender (Male/Femal) based on the given (M/F) value using switch cases

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*char* gender;

cout << "Enter the gender character (e.g: M): ";

cin >> gender;

gender = toupper(gender);

switch (gender){

case 'F':

cout << "Female" << endl;

break;

case 'M':

cout << "Male" << endl;

break;

default:

cout << "Invalid gender" << endl;

}

}

* Write a C++ program to find the greater of two number using switch cases

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*double* a, b;

cout << "Enter two number separated by a space (e.g: 1 2): ";

cin >> a >> b;

switch(a > b){

case true:

cout << a << " is bigger than " << b << endl;

break;

case false:

cout << b << " is bigger than " << a << endl;

break;

}

}

* Write a C++ to replace the value of two variables if they are not equal

**Answer:**

#include <iostream>

using *namespace* std;

*void* swapVarsVal(*int&* *a*, *int&* *b*) {

*a* = *a* + *b*; *// get both to a*

*b* = *a* - *b*; *// get both - b = previous a*

*a* = *a* - *b*; *// get both - b (which is a) = b*

}

*int* main() {

*int* a, b;

cout << "Enter two values separated by a space (e.g: 1 2): ";

cin >> a >> b;

cout << "before" << endl;

cout << "a = " << a << ", b = " << b << endl;

if (!(a == b)) {

swapVarsVal(a, b);

cout << "after" << endl;

cout << "a = " << a << ", b = " << b << endl;

}

swapVarsVal(a, b);

cout << endl << "using switch" << endl;

switch (a != b){

case true:

swapVarsVal(a, b);

cout << "a = " << a << ", b = " << b << endl;

break;

case false:

cout << "a = " << a << ", b = " << b << endl;

break;

}

}

* Write a C++ program to print “Saturday” if the user entered 1, “Sunday” if the user entered 2..etc

**Answer:**

#include <iostream>

using *namespace* std;

*int* main(){

*int* day\_of\_week;

cout << "Enter the day of the week (e.g: 2): ";

cin >> day\_of\_week;

if (day\_of\_week == 1)

cout << "Saturday" << endl;

else if (day\_of\_week == 2)

cout << "Sunday" << endl;

else if (day\_of\_week == 3)

cout << "Monday" << endl;

else if (day\_of\_week == 4)

cout << "Tuesday" << endl;

else if (day\_of\_week == 5)

cout << "Wednesday" << endl;

else if (day\_of\_week == 6)

cout << "Thursday" << endl;

else if (day\_of\_week == 7)

cout << "Friday" << endl;

else

cout << "Invalid day of week" << endl;

switch (day\_of\_week){

case 1:

cout << "Saturday" << endl;

break;

case 2:

cout << "Sunday" << endl;

break;

case 3:

cout << "Monday" << endl;

break;

case 4:

cout << "Tuesday" << endl;

break;

case 5:

cout << "Wednesday" << endl;

break;

case 6:

cout << "Thursday" << endl;

break;

case 7:

cout << "Friday" << endl;

break;

default:

cout << "Invalid day of week" << endl;

}

}