# Wentworth Institute of Technology

## Computer Science

**Part 1: Multiple choice Questions – Single Answer**

1. Which of the following is the correct way to determine if a file stream named inFile opened correctly?
   1. if( inFile.open() )
   2. if( inFile.fail() )
   3. if( inFile.opened() )
   4. if( inFile.failed() )
2. If you have a class named myPersonClass, which of the following correctly declare a constructor in the class definition?
   1. myPersonClass::myPersonClass();
   2. myPersonClass();
   3. init();
   4. cast();
3. Given the following class definition and the following member function header, which is the correct way to output the private data?

class Person

{

public:

void outputPerson(ostream& out);

private:

int age;

float weight;

int id;

};

void Person::outputPerson(ostream& out)

{

//what goes here?

}

* 1. out << person.age << person.weight << person.id;
  2. out << person;
  3. out << age << weight << id;
  4. outputPerson(person);

1. To overload functions with symbolic names (like + - / <<), you must use the keyword \_\_\_\_\_\_\_ before the symbolic name.
   1. const
   2. operator
   3. reference
   4. void
2. Given an array named scores with 25 elements, what is the correct way to access the 25th element?
   1. scores+25
   2. scores[24]
   3. scores[25]
   4. scores[last]
3. If we want a search function to search an array for some value and return either the index where the value was found, or -1 if not found, which of the following prototypes would be appropriate?
   1. void search(const int array, int target, int numElements);
   2. void search(const int array, int target);
   3. int search(const int array[], int numElements);
   4. int search(const int array[], int target, int numElements);
4. Given the following strucure definitions, what is the correct way to print the person's birth year?

struct DateType{

int day;

int month;

int year;

}

struct PersonType{

int age;

float weight;

DateType birthday;

}

PersonType person;

* 1. cout << person.birthday.year;
  2. cout << year;
  3. cout << birthday.year;
  4. cout << peson.year;

1. Given the following class and array declaration, how would you print out the age of the 10th person in the array?

class personClass

{

public:

void setAge(int newAge);

void setGender( char newGender);

void setSalary(float newSalary);

int getAge();

char getGender();

float getSalary();

private:

int age;

char gender;

float salary;

};

personClass people[100];

* 1. cout << people[10];
  2. cout << people[9];
  3. cout << people[9].age;
  4. cout << people[9].getAge();

1. How many members (data and functions) does the following class have?

class Rational

{

public:

Rational( );

Rational(int numer, int denom);

Rational(int whole);

int getNumerator( );

int getDenominator( );

friend void display(ostream& out, const Rational& value);

private:

int numerator;

int denominator;

};

1. 8
2. 2
3. 6
4. 7
5. 5
6. If you want to be able to compile the following code,

Rational r1;

int x;

cout << r1 + x << endl;

which overloaded operator(s) do you need?

* 1. friend Rational operator+( const Rational& left, int right);
  2. friend ostream operator << (ostream& out, const Rational& object);
  3. friend void operator+ (const Rational& left, int right);
  4. friend ostream& operator << (ostream& out, const Rational& object);
  5. A and D

**Part 2: Predict the output.**

Predict the output that would be shown in the terminal window when the following program fragments are executed: [25 points]

|  |  |
| --- | --- |
| Fragment | Output |
| string str="Wentworth Institute Technology";    for ( int i=0; i<str.length(); i++ )  {  char c = str.at( i );    if ( !( c >= 'a' && c <= 'z' ) )  {  cout << c;  }  } |  |
| char str[] = "Wentworth Is Terrific!";  cout << str[0] << str[10] << str[13]; |  |
| vector<int> vectorObject;  for(int i = 0; i <5; i++)  vectorObject.push\_back(i);  for(i = vectorObject.size()-1; i>=0; i--)  cout << vectorObject[i] << " "; |  |

**Part 3: Function Definition**

class Percent

{

public:

friend bool operator ==(const Percent& first, const Percent& second);

friend bool operator <(const Percent& first, const Percent& second);

friend Percent operator +(const Percent& first, const Percent& second);

friend ostream& operator <<(ostream& outs, const Percent& first);

friend istream& operator >>(istream& ins, Percent& first);

Percent(); //value is set to 0

Percent(int percent\_value);//vlaue is set to percent\_value

void print(ostream& out); //print value with %

private:

int value;

};

int main()

{

Percent a(10), b, c;

cout << "Enter a value for b: ";

cin >> b;

c=a+b;

if (a == b)

cout << a;

else if ( a < b)

cout << a << b;

else

cout << a << b << c;

return 0;

}

Present the definition of ..(one or two of the member or friend functions) : [25 points]

**Part 4: Implementations**

Use the following class definition and the main function. Define all the member and friend functions and submit your cpp file. [25 points]

class Money

{

public:

friend Money add(const Money& amount1, const Money& amount2);

friend bool equal(const Money& amount1, const Money& amount2);

Money(long dollars, int cents); //all\_cents is set to $dolloars.cents

Money(long dollars); //all\_cents is set to $dolloars.00

Money(); //all\_cents is set to $0.00

double get\_value() const; //return all\_cents

void input(); //get amount of money from the user in the form $dollars.cents

void output(); //prints amount of money in the form $dollars.cents

private:

long all\_cents;

};

int main()

{

Money mine(100, 50), yours, total;

yours.input();

cout << "My current amount is ";

mine.output();

cout << "Your current amount is ";

yours.output();

total = add(mine, yours);

cout << "Our total amount is ";

total.output();

if(equal(mine, yours))

cout << "Equal" <<endl;

else

cout << "Not equal" <<endl;

return 0;

}

//member function and friend function definitions go here