**CPP Problem Design Example**

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| **Subject: Big Number Division** |
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| **Main testing concept:**   |  |  | | --- | --- | | **Basics** | **Functions** | | ■ C++ BASICS  □ FLOW OF CONTROL  □ FUNCTION BASICS  □ PARAMETERS AND OVERLOADING  ■ ARRAYS  ■ STRUCTURES AND CLASSES  ■ CONSTRUCTORS AND OTHER TOOLS  ■ OPERATOR OVERLOADING, FRIENDS, AND REFERENCES  ■ STRINGS  ■ POINTERS AND DYNAMIC ARRAYS | □ SEPARATE COMPILATION AND NAMESPACES  □ STREAMS AND FILE I/O  □ RECURSION  □ INHERITANCE  □ POLYMORPHISM AND VIRTUAL FUNCTIONS  □ TEMPLATES  □ LINKED DATA STRUCTURES  □ EXCEPTION HANDLING  □ STANDARD TEMPLATE LIBRARY  □ PATTERNS AND UML | |
| **Description:** Implement the BigInt class with following features :  Assignment operators that handle assignments of BigInt and int values.  A division operator and a compound assignment division operator that compute the result of a big integer divided by a normal integer.  ex.  A(BigInt) = C(int)  A(BigInt) = B(BigInt)  A(BigInt) = B(BigInt) / C(int)  A(BigInt) /= C(int)  IO stream operators that can write and print stored value.  ex.  cin >> A(BigInt)  cout << A(BigInt)  cout << A(BigInt) = B(BigInt)  cout << B(BigInt) / C(int)  Note:  a. Notice that input can be positive or negative.  b. The absolute value of big integer will not exceeding 10^9999.  c. If divided by zero, value becomes "Inf" or "-Inf".  d. Input value won't be “-0”.  **Input:**  Replace main.cpp  **Output:**  None.  **Sample Input / Output：**   |  |  | | --- | --- | | Sample Input | Sample Output | | 0 1  0 -1  1 1  2 -2  3 0  -4 0  1 2  2 -3  100 3  -1234 5  -6789000000000000 -11 | 0  0  1  -1  Inf  -Inf  0  0  33  -246  617181818181818 | |
| **□ Easy, Only basic programming syntax and structure are required.**  ■ **Medium, Multiple programming grammars and structures are required.**  **□ Hard, Need to use multiple program structures or complex data types.** |
| **Expected solving time:**  30 mins |
| **Other notes:**  **Make sure all operations are correct.**  **Example main.cpp :**  int main() {    BigInt a;  int b;  while (cin >> a >> b) {  a /= b;  cout << a << endl;  }  return 0;  } |