Status	Finished
Started	Sunday, 2 February 2025, 8:13 PM
Completed	Sunday, 2 February 2025, 8:16 PM
Duration	2 mins 20 secs
Grade	**100.00** out of 100.00

Question **1**

Correct

Mark 100.00 out of 100.00

Complete the C++ template file presented below to write a multithreaded program to transform numbers from decimal to binary. The input for the program is a list of n positive integer values. You must complete the following tasks:

1. Create n child threads. Each child thread will receive a value from the input numbers.
2. Write the child thread function that receives the positive integer and the location to store the binary number (std::string).
3. Make sure the parent thread waits for all child threads to end before printing the output.

Notes:

1. You can safely assume that the input is always valid.
2. Use the comments in the provided template file to complete your solution.
3. Not using POSIX threads will translate into a penalty of 100%.

For example:

Input	Result
12	12 base 10 is equal to 1100
13	13 base 10 is equal to 1101
9	9 base 10 is equal to 1001
5	5 base 10 is equal to 101
24	24 base 10 is equal to 11000
18	18 base 10 is equal to 10010

Answer: (penalty regime: 0 %)

Reset answer

```
// Write the child thread function here
void* dec2bin(void* void_ptr){
    arguments *ptr = (arguments*) void_ptr; //REMEMBER THIS
    int value = ptr->value;
    do{
        if(value % 2 == 0){
            ptr->binCode = "0" + ptr->binCode;
        }
        else{
            ptr->binCode = "1" + ptr->binCode;
        }
        value = (value - value % 2) / 2;
    }
    while(value > 0);
    return nullptr;
}

int main()
{
    std::vector<arguments> arg;
    arguments tempHolder;
    tempHolder.binCode = "";
    while (std::cin >> tempHolder.value)
    {
        arg.push_back(tempHolder);
    }
    int nValues = arg.size();
     pthread_t *tid = new pthread_t[nValues];

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

        if(pthread_create(&tid[i],nullptr,dec2bin,(void *) &arg.at(i))!= 0)
        {
            std::cerr << "Error creating thread" << std::endl;
            return 1;

        }
    }

    // Wait for the other threads to finish.
    // Call pthread_join here
    for (int i = 0; i < nValues; i++)
        pthread_join(tid[i], nullptr); //can use NULL also


    for (int i = 0; i < nValues; i++)
    {
        std::cout << arg[i].value << " base 10 is equal to " << arg[i].binCode << std::endl;
    }
    if (tid!=nullptr)
        delete[] tid;
    return 0;
```

	Input	Expected	Got	
✓	12 13 9 5 24 18	12 base 10 is equal to 1100 13 base 10 is equal to 1101 9 base 10 is equal to 1001 5 base 10 is equal to 101 24 base 10 is equal to 11000 18 base 10 is equal to 10010	12 base 10 is equal to 1100 13 base 10 is equal to 1101 9 base 10 is equal to 1001 5 base 10 is equal to 101 24 base 10 is equal to 11000 18 base 10 is equal to 10010	✓

Passed all tests! ✓

▸ Show/hide question author's solution (Cpp)

Correct

Marks for this submission: 100.00/100.00.

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Exam 1 ►