ADD GMP TO ANDROID STUDIO USING NDK

1. Download NDK 10 from https://www.crystax.net/en/download.

2. Use pre-built GMP library by https://github.com/Rupan/gmp

3. Create a directory call 'jni' in Android Studio project.

4. Create a directory call 'jniLibs' in Android Studio app/src/main.

5. Copy Rupan's gmp directory into jni.

6. Use the code from the appendix for Android.mk, Application.mk and test.cpp and place in jni.

7. From jni directory, run ndk-build from crystalx.

8. A libs directory will be build on the directory outside jni.

9. Copy contents of libs to jniLibs.

10. In MainActivity.java, add these code in MainActivity class:

```
static {
    System.loadLibrary("ndktest");
    System.loadLibrary("gmp");
}

public native String stringFromJNI();
```

APPENDIX

```
#Android.mk
JNI_PATH := $(call my-dir)

GMP_WITH_CPLUSPLUS := yes
include $(JNI_PATH)/gmp/Android.mk
LOCAL_PATH := $(JNI_PATH)

include $(CLEAR_VARS)
LOCAL_MODULE := ndktest
LOCAL_SRC_FILES := test.cpp
LOCAL_LDLIBS += -llog
LOCAL_SHARED_LIBRARIES := gmp
LOCAL_CPP_FEATURES := exceptions
include $(BUILD_SHARED_LIBRARY)
```

```
#Application.mk
APP_ABI := x86 #Depends on phone architecture
APP_PLATFORM := android-30 #Depends on phone APi
APP_MODULES := gmp gmpxx ndktest
```

```cpp
//test.cpp
#include <jni.h>
#include <string>
#include <iostream>
#include <gmpxx.h>
#include <gmp.h>
using namespace std;

extern "C" JNIEXPORT jstring JNICALL
Java_com_example_ndk_1build_MainActivity_stringFromJNI(JNIEnv* env,jobject /*
this */) {

    mpz_t a,b,c;
    mpz_inits(a,b,c,NULL);
    mpz_set_str(a, "1234", 10);
    mpz_set_str(b,"-5678", 10); //Decimal base
    mpz_add(c,a,b);
    cout<<"\nThe exact result is:";
    mpz_out_str(stdout, 10, c); //Stream, numerical base, var
    cout<<endl;
    mpz_abs(c, c);
    cout<<"The absolute value result is:";
    mpz_out_str(stdout, 10, c);
    cout<<endl;
    cin.get();

    std::string hello = "Hello from C++";
    return env->NewStringUTF(hello.c_str());
}
```