Homework Assignment #4 – **MIPS Assembly Programming**

CDA 3100, Computer Organization I

The purpose of this assignment is to get you be familiar with assembly programming and calling conversions with MIPS.

**You must test your code using SPIM. Individual work.**

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In this homework, you are asked to write two functions to process part of a Shakespeare play I copied from <http://www.william-shakespeare.info/act2-script-text-henry-vi-part1.htm>. I have provided the skeleton of the code at the end of this description of the homework.

* strcmp **(50 points)**: Accepts in $a0 and $a1 the addresses of two asciiz strings. Returns in $v0 1 if the two strings are identical for all characters, case insensitive, before the last “0” in the second string; otherwise returns 0.
* wordcount **(50 points)**: Accepts in $a0 and $a1 the addresses of two asciiz strings, called str0 and str1. Returns in $v0 the number of times str1 appears in str0. It must call strcmp. An appearance of str1 in str0 is case insensitive, and is counted as long as a segment of str0 has the same ascii values as str1. For example, if str0 is “ABABA” and str1 is “aBa”, the number of appearances is 2.

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.data

dialog :.asciiz "BEDFORD

Coward of France! how much he wrongs his fame,

Despairing of his own arm's fortitude,

To join with witches and the help of hell!

BURGUNDY

Traitors have never other company.

But what's that Pucelle whom they term so pure?

TALBOT

A maid, they say.

BEDFORD

A maid! and be so martial!

BURGUNDY

Pray God she prove not masculine ere long,

If underneath the standard of the French

She carry armour as she hath begun.

TALBOT

Well, let them practise and converse with spirits:

God is our fortress, in whose conquering name

Let us resolve to scale their flinty bulwarks.

BEDFORD

Ascend, brave Talbot; we will follow thee.

TALBOT

Not all together: better far, I guess,

That we do make our entrance several ways;

That, if it chance the one of us do fail,

The other yet may rise against their force.

BEDFORD

Agreed: I'll to yond corner.

BURGUNDY

And I to this.

TALBOT

And here will Talbot mount, or make his grave.

Now, Salisbury, for thee, and for the right

Of English Henry, shall this night appear

How much in duty I am bound to both.

Sentinels

Arm! arm! the enemy doth make assault!

ALENCON

How now, my lords! what, all unready so?

BASTARD OF ORLEANS

Unready! ay, and glad we 'scaped so well.

REIGNIER

'Twas time, I trow, to wake and leave our beds,

Hearing alarums at our chamber-doors.

ALENCON

Of all exploits since first I follow'd arms,

Ne'er heard I of a warlike enterprise

More venturous or desperate than this.

BASTARD OF ORLEANS

I think this Talbot be a fiend of hell.

REIGNIER

If not of hell, the heavens, sure, favour him.

ALENCON

Here cometh Charles: I marvel how he sped.

BASTARD OF ORLEANS

Tut, holy Joan was his defensive guard.

Enter CHARLES and JOAN LA PUCELLE

CHARLES

Is this thy cunning, thou deceitful dame?

Didst thou at first, to flatter us withal,

Make us partakers of a little gain,

That now our loss might be ten times so much?

JOAN LA PUCELLE

Wherefore is Charles impatient with his friend!

At all times will you have my power alike?

Sleeping or waking must I still prevail,

Or will you blame and lay the fault on me?

Improvident soldiers! had your watch been good,

This sudden mischief never could have fall'n.

CHARLES

Duke of Alencon, this was your default,

That, being captain of the watch to-night,

Did look no better to that weighty charge.

ALENCON

Had all your quarters been as safely kept

As that whereof I had the government,

We had not been thus shamefully surprised.

BASTARD OF ORLEANS

Mine was secure.

REIGNIER

And so was mine, my lord.

CHARLES

And, for myself, most part of all this night,

Within her quarter and mine own precinct

I was employ'd in passing to and fro,

About relieving of the sentinels:

Then how or which way should they first break in?

JOAN LA PUCELLE

Question, my lords, no further of the case,

How or which way: 'tis sure they found some place

But weakly guarded, where the breach was made.

And now there rests no other shift but this;

To gather our soldiers, scatter'd and dispersed,

And lay new platforms to endamage them.

Soldier

I'll be so bold to take what they have left.

The cry of Talbot serves me for a sword;

For I have loaden me with many spoils,

Using no other weapon but his name.

Exit

SCENE II. Orleans. Within the town.

Enter TALBOT, BEDFORD, BURGUNDY, a Captain, and others

BEDFORD

The day begins to break, and night is fled,

Whose pitchy mantle over-veil'd the earth.

Here sound retreat, and cease our hot pursuit.

Retreat sounded

TALBOT

Bring forth the body of old Salisbury,

And here advance it in the market-place,

The middle centre of this cursed town.

Now have I paid my vow unto his soul;

For every drop of blood was drawn from him,

There hath at least five Frenchmen died tonight.

And that hereafter ages may behold

What ruin happen'd in revenge of him,

Within their chiefest temple I'll erect

A tomb, wherein his corpse shall be interr'd:

Upon the which, that every one may read,

Shall be engraved the sack of Orleans,

The treacherous manner of his mournful death

And what a terror he had been to France.

But, lords, in all our bloody massacre,

I muse we met not with the Dauphin's grace,

His new-come champion, virtuous Joan of Arc,

Nor any of his false confederates.

BEDFORD

'Tis thought, Lord Talbot, when the fight began,

Roused on the sudden from their drowsy beds,

They did amongst the troops of armed men

Leap o'er the walls for refuge in the field.

BURGUNDY

Myself, as far as I could well discern

For smoke and dusky vapours of the night,

Am sure I scared the Dauphin and his trull,

When arm in arm they both came swiftly running,

Like to a pair of loving turtle-doves

That could not live asunder day or night.

After that things are set in order here,

We'll follow them with all the power we have.

Enter a Messenger

Messenger

All hail, my lords! which of this princely train

Call ye the warlike Talbot, for his acts

So much applauded through the realm of France?

TALBOT

Here is the Talbot: who would speak with him?

Messenger

The virtuous lady, Countess of Auvergne,

With modesty admiring thy renown,

By me entreats, great lord, thou wouldst vouchsafe

To visit her poor castle where she lies,

That she may boast she hath beheld the man

Whose glory fills the world with loud report.

BURGUNDY

Is it even so? Nay, then, I see our wars

Will turn unto a peaceful comic sport,

When ladies crave to be encounter'd with.

You may not, my lord, despise her gentle suit.

TALBOT

Ne'er trust me then; for when a world of men

Could not prevail with all their oratory,

Yet hath a woman's kindness over-ruled:

And therefore tell her I return great thanks,

And in submission will attend on her.

Will not your honours bear me company?

BEDFORD

No, truly; it is more than manners will:

And I have heard it said, unbidden guests

Are often welcomest when they are gone.

TALBOT

Well then, alone, since there's no remedy,

I mean to prove this lady's courtesy.

Come hither, captain.

\n\n"

namehere:.asciiz "BEDFORD"

.text

.globl main

main:la $a0, dialog

la $a1, namehere

jal wordcount

ori $a0,$v0, 0

li $v0,1 # print an integer in $a0

syscall

done:li $v0, 10 # Exit

syscall

#------------------------------------------------

wordcount:

jr $ra

#------------------------------------------------

#------------------------------------------------

strcmp:

jr $ra

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