Assembly code:

```
Lui   x1, 0x00000
addi  x1, x1, 0x000
add   x2, x0, x0
addi  x3, x0, 10
Lw    x3, 0(x1)
Loop:  bge  x2, x3, ENDLOOP
add   x6, x1, x2
Lw    x4, 0(x6)
if     bge  x3, x4, ENDIF
add   x5, x4, x0
ENDIF  addi  x2, x2, 1
Jal   x0, Loop
ENDLOOP
```

ALU Controller
  OpC   6
  Func3 3
  3
  ALUOp 2
  ALU Ctrl 3

Branch Controller
  Func3 3
  branch
  zero
  Pos
  PCSrc 2

Main Controller
  OpC 6
  ImmSrc 2
  ALUOp, Result src 2
  branch
  Regwrite
  memwrite
  ALUSrc
  jal
  jalr

PC — Instruction mem — A — Ins

Register mem
  A1
  A2
  A3
  WD
  RD1
  RD2
  we
  Regwrite
  ImmSrc

Imm Ext — ImmSrc

ALU
  ALUSrc
  f3 ALU func
  Zero
  Pos

Data Mem
  A
  WD
  RD
  we
  memwrite

PCSrc
result src