

```
entry:
    %buffer = alloca [4 x [64 x i64]]*, align 16
    %coeff = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 75
    %0 = lhrcast %struct.jpeg_d_coef_controller** %coeff to
    ... %struct.my_coef_controller*
    %1 = load %struct.my_coef_controller*, %struct.my_coef_controller** %0,
    ... align 8, !tbaa.12
    %2 = lhrcast [4 x [64 x i64]]* %buffer to i8*
    call void @llvm.lifetime.start(i64 32, i8* %2) #5
    %comps_in_scan = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 62
    %10 = load i32, i32* %comps_in_scan, align 8, !tbaa.110
    %cmp141 = icmp sgt i32 %3, 0
    br i1 %cmp141, label %for.body.lr.ph, label %for.end
```

```
for.body.lr.ph:
    %cinfo = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 1
    %4 = lhrcast %struct.jpeg_decompress_struct* %cinfo to
    ... %struct.jpeg_common_struct*
    %input_MCU_row = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 35
    br label %for.body
```

```
for.body:
    %incin = phi i64 [ 0, %for.body.lr.ph ], [ %indvars.iv.next155,
    ... %for.body ]
    %arrayidx = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 63, i64 %indvars.iv154
    %5 = load %struct.jpeg_component_info*, %struct.jpeg_component_info**
    ... %arrayidx, align 8, !tbaa.111
    %6 = load %struct.jpeg_memory_mgr*, %struct.jpeg_memory_mgr** %mem, align 8,
    ... !tbaa.112
    %access_virt_barray = getelementptr inbounds %struct.jpeg_memory_mgr,
    ... %struct.jpeg_memory_mgr* %6, i64 0, i32 8
    %7 = load [64 x i64]** %struct.jpeg_common_struct*,
    ... %struct.jpeg_barray_control*, i32, i32, i32, [64 x i64]**
    ... %struct.jpeg_common_struct*, %struct.jpeg_barray_control*, i32, i32, i32)**
    ... %access_virt_barray, align 8, !tbaa.113
    %component_idx = getelementptr inbounds %struct.jpeg_component_info,
    ... %struct.jpeg_component_info* %5, i64 0, i32 1
    %8 = load i32, i32* %component_index, align 4, !tbaa.116
    %idxpm2 = sext i32 %8 to i64
    %arrayidx3 = getelementptr inbounds %struct.my_coef_controller,
    ... %struct.my_coef_controller* %1, i64 0, i32 5, i64 %idxpm2
    %9 = load %struct.jvrt_barray_control*, %struct.jvrt_barray_control**
    ... %arrayidx3, align 8, !tbaa.11
    %10 = load i32, i32* %input_MCU_row, align 8, !tbaa.118
    %s_samp_factor = getelementptr inbounds %struct.jpeg_component_info,
    ... %struct.jpeg_component_info* %5, i64 0, i32 3
    %11 = load i32, i32* %s_samp_factor, align 4, !tbaa.119
    %mul = mul i32 %11, %10
    %call = tail call [64 x i64]** @struct.jpeg_common_struct* %4,
    ... %struct.jvrt_barray_control* %9, i32 %mul, i32 %11, i32 1, #5
    %arrayidx6 = getelementptr inbounds [4 x [64 x i64]]*, [4 x [64 x i64]]**
    ... %buffer, i64 0, i64 %indvars.iv154
    store [64 x i64]** %call, [64 x i64]** %arrayidx6, align 8, !tbaa.11
    %indvars.iv.next155 = add nsw i64 %indvars.iv154, 1
    %12 = load i32, i32* %comps_in_scan, align 8, !tbaa.110
    %13 = sext i32 %12 to i64
    %comp = icmp slt i64 %indvars.iv.next155, %13
    br i1 %comp, label %for.body, label %for.end.loopexit
```

```
for.end.loopexit:
    br label %for.end
```

```
for.end:
    %MCU_vert_offset = getelementptr inbounds %struct.my_coef_controller,
    ... %struct.my_coef_controller* %1, i64 0, i32 2
    %14 = load i32, i32* %MCU_vert_offset, align 4, !tbaa.120
    %MCU_rows_per_MCU_row = getelementptr inbounds %struct.my_coef_controller,
    ... %struct.my_coef_controller* %1, i64 0, i32 3
    %15 = load i32, i32* %MCU_rows_per_MCU_row, align 8, !tbaa.123
    %cmp1138 = icmp slt i32 %14, %15
    br i1 %cmp1138, label %for.body9.lr.ph, label %for.end54
```

```
for.body9.lr.ph:
    %MCU_cir = getelementptr inbounds %struct.my_coef_controller,
    ... %struct.my_coef_controller* %1, i64 0, i32 1
    %MCUs_per_row = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 64
    %entropy = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 79
    %arrayidx5 = getelementptr inbounds %struct.my_coef_controller,
    ... %struct.my_coef_controller* %1, i64 0, i32 4, i64 0
    %16 = sext i32 %14 to i64
    %pre = load i32, i32* %MCU_cir, align 8, !tbaa.124
    %pre156 = load i32, i32* %MCUs_per_row, align 8, !tbaa.125
    br label %for.body9
```

```
for.body9:
    %17 = phi i32 [ %15, %for.body9.lr.ph ], [ %35, %for.end50 ]
    %18 = phi i32 [ %pre156, %for.body9.lr.ph ], [ %36, %for.end50 ]
    %19 = phi i32 [ %pre, %for.body9.lr.ph ], [ 0, %for.end50 ]
    %comp = icmp slt i64 %for.body9.lr.ph ], [ %indvars.iv.next153,
    ... %for.end50 ]
    %cmp11136 = icmp slt i32 %19, %18
    br i1 %cmp11136, label %for.cond13.preheader, label %for.end50
```

```
for.cond13.preheader:
    br label %for.cond13.preheader
```

```
for.cond13.preheader:
    %MCU_cof_num.0137 = phi i32 [ %inc49, %for.inc48 ], [ %19,
    ... %for.cond13.preheader.preheader ]
    %20 = load i32, i32* %comps_in_scan, align 8, !tbaa.110
    %cmp15133 = icmp sgt i32 %20, 0
    br i1 %cmp15133, label %for.body16.preheader, label %for.end43
```

```
for.body16.preheader:
    %21 = sext i32 %20 to i64
    br label %for.body16
```

```
for.body16:
    %indvars.iv150 = phi i64 [ %indvars.iv.next151, %for.inc41 ], [ 0,
    ... %for.body16.preheader ]
    %b1kn.0134 = phi i32 [ %b1kn.1, %for.inc41 ], [ 0,
    ... %for.body16.preheader ]
    %arrayidx19 = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 63, i64 %indvars.iv150
    %22 = load %struct.jpeg_component_info*, %struct.jpeg_component_info**
    ... %arrayidx19, align 8, !tbaa.111
    %MCU_width = getelementptr inbounds %struct.jpeg_component_info,
    ... %struct.jpeg_component_info* %22, i64 0, i32 13
    %MCU_height = getelementptr inbounds %struct.jpeg_component_info,
    ... %struct.jpeg_component_info* %22, i64 0, i32 14
    %23 = load i32, i32* %MCU_height, align 8, !tbaa.126
    %cmp22129 = icmp sgt i32 %23, 0
    br i1 %cmp22129, label %for.body23.lr.ph, label %for.inc41
```

```
for.body23.lr.ph:
    %24 = load i32, i32* %MCU_width, align 4
    %mul20 = mul i32 %24, %MCU_cof_num.0137
    %arrayidx26 = getelementptr inbounds [4 x [64 x i64]]*, [4 x [64 x i64]]**
    ... %buffer, i64 0, i64 %indvars.iv150
    %25 = load [64 x i64]**, [64 x i64]** %arrayidx26, align 8
    %idxext = sext i32 %mul20 to i64
    %comp30125 = icmp slt i32 %24, 0
    br i1 %comp30125, label %for.body23.us.preheader, label %for.inc41
```

```
for.body23.us.preheader:
    %26 = sext i32 %23 to i64
    br label %for.body23.us
```

```
for.body23.us:
    %27 = phi i32 [ %24, %for.body23.us.preheader ], [ %pre157,
    ... %for.cond28.for.inc38_crit_edge.us.for.body23.us_crit_edge ]
    %indvars.iv147 = phi i64 [ 0, %for.body23.us.preheader ], [
    ... %indvars.iv.next148 ]
    %for.cond28.for.inc38_crit_edge.us.for.body23.us_crit_edge ]
    %b1kn.1130.us = phi i32 [ %b1kn.0134, %for.body23.us.preheader ], [
    ... %inc32.us.lesser, %for.cond28.for.inc38_crit_edge.us.for.body23.us_crit_edge ]
    %28 = add nsw i64 %indvars.iv147, %indvars.iv152
    %arrayidx27.us = getelementptr inbounds [64 x i64]**, [64 x i64]** %25, i64
    ... %28
    %29 = load [64 x i64]**, [64 x i64]** %arrayidx27.us, align 8, !tbaa.111
    %add_ptr.us = getelementptr inbounds [64 x i64]**, [64 x i64]** %29, i64
    ... %idxext
    %30 = sext i32 %b1kn.1130.us to i64
    br label %for.body31.us
```

```
for.body31.us:
    %indvars.iv = phi i64 [ %30, %for.body23.us ], [ %indvars.iv.next,
    ... %for.body31.us ]
    %buffer_ptr.0128.us = phi [64 x i64]** [ %add_ptr.us, %for.body23.us ], [
    ... %incdec_ptr.us, %for.body31.us ]
    %index.0127.us = phi i32 [ 0, %for.body23.us ], [ %inc30.us, %for.body31.us ]
    %b1kn.2126.us = phi i32 [ %b1kn.1130.us, %for.body23.us ], [ %inc32.us,
    ... %for.body31.us ]
    %incdec_ptr.us = getelementptr inbounds [64 x i64]**, [64 x i64]**
    ... %buffer_ptr.0128.us, i64 1
    %inc32.us = add nsw i32 %b1kn.2126.us, 1
    %arrayidx34.us = getelementptr inbounds %struct.my_coef_controller,
    ... %struct.my_coef_controller* %1, i64 0, i32 4, i64 %indvars.iv
    store [64 x i64]** %buffer_ptr.0128.us, [64 x i64]** %arrayidx34.us, align 8,
    ... !tbaa.111
    %inc36.us = add nsw i32 %index.0127.us, 1
    %cmp30125.us = icmp slt i32 %inc36.us, %27
    %indvars.iv.next = add nsw i64 %indvars.iv, 1
    br i1 %cmp30125.us, label %for.body31.us, label
    ... %for.cond28.for.inc38_crit_edge.us
```

```
for.cond28.for.inc38_crit_edge.us:
    %inc32.us.lesser = phi i32 [ %inc32.us, %for.body31.us ],
    ... %indvars.iv.next148 = add nsw i64 %indvars.iv147, 1
    %cmp22.us = icmp slt i64 %indvars.iv.next148, %26
    br i1 %cmp22.us, label
    ... %for.cond28.for.inc38_crit_edge.us.for.body23.us_crit_edge, label
    ... %for.inc41.loopexit
```

```
for.inc41.loopexit:
    %inc32.us.lesser = phi i32 [ %inc32.us.lesser,
    ... %for.cond28.for.inc38_crit_edge.us ]
    br label %for.inc41
```

```
for.inc41:
    %b1kn.1.lesser = phi i32 [ %b1kn.0134, %for.body16 ], [ %b1kn.0134,
    ... %for.body23.lr.ph ], [ %inc32.us.lesser.lesser, %for.inc41.loopexit ]
    %indvars.iv.next151 = add nsw i64 %indvars.iv150, 1
    %cmp15 = icmp slt i64 %indvars.iv.next151, %21
    br i1 %cmp15, label %for.body16, label %for.end43.loopexit
```

```
for.end43.loopexit:
    br label %for.end43
```

```
for.end43:
    %31 = load %struct.jpeg_entropy_decoder*, %struct.jpeg_entropy_decoder**
    ... %entropy, align 8, !tbaa.127
    %decode_mcu = getelementptr inbounds %struct.jpeg_entropy_decoder,
    ... %struct.jpeg_entropy_decoder* %31, i64 0, i32
    ... %32 = load i32 (%struct.jpeg_decompress_struct*, [64 x i64])**, i32
    ... %struct.jpeg_decompress_struct*, [64 x i64]** %decode_mcu, align 8, !tbaa
    ... 128
    %call45 = tail call i32 @struct.jpeg_decompress_struct* nonnull %cinfo,
    ... [64 x i64]** %arraydecay) #5
    %isb0001 = icmp eq i32 %call45, 0
    br i1 %isb0001, label %if.then, label %for.inc48
```

```
for.inc48:
    %inc49 = add i32 %MCU_cof_num.0137, 1
    %34 = load i32, i32* %MCUs_per_row, align 8, !tbaa.125
    %cmp11 = icmp slt i32 %inc49, %34
    br i1 %cmp11, label %for.cond13.preheader, label %for.end50.loopexit
```

```
for.end50.loopexit:
    %35 = phi i32 [ %34, %for.inc48 ], [ %17, %for.body9 ]
    %36 = phi i32 [ %35, %for.end50.loopexit ], [ %18, %for.body9 ]
    store i32 %35, i32* %MCU_cir, align 8, !tbaa.124
    %indvars.iv.next153 = add i64 %indvars.iv152, 1
    %37 = sext i32 %35 to i64
    %comp8 = icmp slt i64 %indvars.iv.next153, %37
    br i1 %comp8, label %for.body9, label %for.end54.loopexit
```

```
for.end54.loopexit:
    br label %for.end54
```

```
for.end54:
    %input_MCU_row55 = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 35
    %38 = load i32, i32* %input_MCU_row55, align 8, !tbaa.118
    %inc56 = add i32 %38, 1
    %row132 = %inc56, i32* %input_MCU_row55, align 8, !tbaa.118
    %total_MCU_rows = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 60
    %39 = load i32, i32* %total_MCU_rows, align 8, !tbaa.120
    %cmp57 = icmp slt i32 %inc56, %39
    br i1 %cmp57, label %if.then58, label %if.end59
```

```
if.then58:
    %40 = load %struct.my_coef_controller*, %struct.my_coef_controller** %40,
    ... align 8, !tbaa.12
    %41 = load i32, i32* %comps_in_scan, align 8, !tbaa.110
    %cmp14 = icmp sgt i32 %41, 1
    br i1 %cmp14, label %if.then51, label %if.else51
```

```
if.else51:
    %sub1 = add i32 %39, -1
    %cmp21 = icmp slt i32 %inc56, %sub1
    %arrayidx1 = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 63, i64 0
    %42 = load %struct.jpeg_component_info*, %struct.jpeg_component_info**
    ... %arrayidx1, align 8, !tbaa.111
    %cmp11 = icmp slt i32 %if.then51, label %if.else51
```

```
if.then51:
    %s_samp_factor1 = getelementptr inbounds %struct.jpeg_component_info,
    ... %struct.jpeg_component_info* %40, i64 0, i32 3
    %43 = load i32, i32* %s_samp_factor1, align 4, !tbaa.119
    %MCU_rows_per_MCU_row41 = getelementptr inbounds
    ... %struct.my_coef_controller, %struct.my_coef_controller* %40, i64 0, i32 3
    store i32 %43, i32* %MCU_rows_per_MCU_row41, align 8, !tbaa.123
    br label %start_MCU_row.exit
```

```
if.else51:
    %last_row_height1 = getelementptr inbounds %struct.jpeg_component_info,
    ... %struct.jpeg_component_info* %40, i64 0, i32 3
    %arrayidx1 = getelementptr inbounds %struct.jpeg_input_controller,
    ... %struct.jpeg_input_controller* %45, i64 0, i32 3
    %MCU_rows_per_MCU_row81 = getelementptr inbounds
    ... %struct.my_coef_controller, %struct.my_coef_controller* %40, i64 0, i32 3
    store i32 %44, i32* %MCU_rows_per_MCU_row81, align 8, !tbaa.123
    br label %start_MCU_row.exit
```

```
start_MCU_row.exit:
    %MCU_cir1 = getelementptr inbounds %struct.my_coef_controller,
    ... %struct.my_coef_controller* %40, i64 0, i32 1
    store i32 0, i32* %MCU_cir1, align 8, !tbaa.124
    %MCU_vert_offset1 = getelementptr inbounds %struct.my_coef_controller,
    ... %struct.my_coef_controller* %40, i64 0, i32 2
    store i32 %45, i32* %MCU_vert_offset1, align 4, !tbaa.120
    br label %cleanup
```

```
if.end59:
    %inputctrl = getelementptr inbounds %struct.jpeg_decompress_struct,
    ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 77
    %45 = load %struct.jpeg_input_controller*, %struct.jpeg_input_controller**
    ... %inputctrl, align 8, !tbaa.132
    %finish_input_pass = getelementptr inbounds %struct.jpeg_input_controller,
    ... %struct.jpeg_input_controller* %45, i64 0, i32 3
    %46 = load void (%struct.jpeg_decompress_struct)*, void
    ... (%struct.jpeg_decompress_struct)* %finish_input_pass, align 8, !tbaa.133
    tail call void @64 (%struct.jpeg_decompress_struct*) nonnull #if.end59
    br label %cleanup
```

```
cleanup:
    %retval.0 = phi i32 [ 0, %if.then ], [ 3, %start_MCU_row.exit ], [ 4,
    ... %if.end59 ]
    call void @llvm.lifetime.end(i64 32, i8* %2) #5
    ret i32 %retval.0
```

CFG for 'consume\_data' function